

Consumer Acceptance of Cape Goodberry Processed Products in Muang Chiang Mai District, Chiang Mai Province Thailand

Pudjaiyo Nunticha¹, Pongwiritthon Kajornathapol², Srika Wipawee³, Chaiyo Wilaiporn⁴ and Suttipong Thumtheang⁵

Abstract

The research investigates consumer acceptance and the product development of processed Cape Gooseberry products in Muang Chiang Mai District, Chiang Mai Province. Conducted with 400 individuals from Chiang Mai who were purchasing at Doi Kham Royal Project, data collection involved questionnaires, interviews, and consumer acceptance tests. Results demonstrate a high interest in Cape Gooseberry products, with texture softness significantly influencing purchasing decisions. Recommendations concentrate on improving texture, scent, taste, and color to enhance consumer appeal, while also addressing packaging, pricing, and online marketing. This study provides valuable insights into the factors driving consumer acceptance, highlighting the pivotal role of texture. Guidelines prioritize quality enhancement and consider social values, health, and digital market development, aiming to maximize the appeal and competitiveness of processed agricultural products.

Keywords: Cape Goodberry, Processed Product, Design Brand, Ethnic Group, Thailand

INTRODUCTION

In 2021, the government announced the creation of a Special Economic Corridor across all four regions to promote economic development. The initiative includes five key areas of focus: 1) Investment facilitation and benefits, 2) Infrastructure development, 3) Production and service chain development, 4) Entrepreneurial workforce support and development, and 5) Research and technology transfer. The Northern Economic Corridor (NEC) - Creative LANNA, comprising Chiang Rai, Chiang Mai, Lamphun, and Lampang, is being transformed into a prime sustainable creative economic hub in the country. The region is home to various ethnic groups and hill tribes, such as the Red Lahu, Yunna Chinese, and Shan people (Tai Yai), including the Kae Noi community in the Mueang Na Sub-district of Chiang Dao District, Chiang Mai Province.

The Kae Noi community is known for the Kae Noi Royal Project Cooperative, which is the primary source of cape gooseberries in Thailand, as well as other agricultural products such as Iceberg lettuce, green oak leaf lettuce, red oak leaf lettuce, and avocados. For years, the cooperative has been promoting and supporting agricultural resources to generate income for its members, functioning as a community financial institution that assists farmers who cannot obtain loans or purchase/sell goods at reasonable market prices. The cooperative's operations are being strengthened and made more efficient to improve the living standards of community members.

The COVID-19 pandemic has had a significant impact on the area's members and farmers, affecting their social and economic well-being due to the downturn in the economy. The pandemic's various measures have hindered the movement of agricultural and food production factors, leading to a decrease in consumer demand and

¹ Faculty of Business Administration, Nakhon Ratchasima College, Thailand. Email: arerut64@hotmail.com

² Faculty of Business Administration, Northern College, Thailand and. ADVEX Management School. Email: tok2029@gmail.com Orcid: <https://orcid.org/0000-0001-5398-6537>.

³ Faculty of Management Sciences, Chiang Mai Rajabhat University, Thailand. Email: wipawee@g.cmru.ac.th Orcid: <https://orcid.org/0009-0007-0747-809X>.

⁴ Faculty of Management Sciences, Chiang Mai Rajabhat University, Thailand, Email: wilaiporn.ch@g.cmru.ac.th Orcid: <https://orcid.org/0009-0004-6290-99705>.

⁵ Doctor of Medicine Boston University, USA, Independent Researchers and Entrepreneurs of IDE Clinic, Thailand. E-mail: Suttipat@hotmail.com Orcid: <https://orcid.org/0000-0001-5398-6537>.

surplus agricultural products in the food system. This has resulted in lower household income, particularly for small households with low savings and daily income. Private businesses have laid off employees, exacerbating the situation.

To address this, the Kae Noi community applied for a grant from the Social Innovation Driving Unit for the Upper Northern Region 1 (SID-N1) under the National Innovation Agency's (Public Organization) support. The grant was provided through the Information Center of Knowledge, Local Wisdom, and Community Innovation (Social Enterprise). The initiative focused on developing processed products from cape gooseberries, resulting in five new products: cape gooseberry jam, dried cape gooseberry, cape gooseberry gummy, cape gooseberry bread, and cape gooseberry wine as shown in figure 1. These products can increase non-agricultural income, reduce agricultural and household debt management costs, and add value to the agricultural products.



Figure 1 Processed products from cape gooseberry

The project mentioned earlier resulted in the creation of processed products from cape gooseberry, which were made possible through the community's collaboration and technology. Consequently, the research team aims to test the acceptability of these products to determine consumers' feedback and recommendations. The study's findings will serve as a blueprint for enhancing the processing and improvement of cape gooseberry products, as well as guiding the development of the "Kae Noi" Green Products social enterprise from ethnic groups to ensure consumer acceptance. Additionally, the results will provide guidance to organizations and relevant agencies for future management purposes.

LITERATURE REVIEW

Product Tests

Lehmann and Winer (2002) suggested that the next step after the concept testing process is to produce the product and conduct product testing with consumers. The objectives of product testing include identifying product defects, assessing commercial or business opportunities, evaluating product variations or formulas, identifying interesting product features in different market segments, and generating new ideas for marketing planning. During both the concept testing and product testing phases, sample consumers are questioned about their purchasing tendencies. In the product testing phase, the group's product preferences and purchasing trends are evaluated after the consumers have tested the product. Although purchase trends can help measure product testing results, they cannot predict actual purchases. To predict purchases more accurately, a market test should be conducted by actually selling the product in the real market, specifically in the market segment that needs to be explored (Crawford and Benedetto, 2003). Therefore, it can be concluded that product testing with consumers is necessary to identify defects, assess opportunities, evaluate formulas or variations, identify interesting features, and generate marketing ideas. In this study, the consumer test method was used.

Sensory Evaluation

Sensory Evaluation is a qualitative method that utilizes the human senses of sight, taste, smell, and touch to evaluate product quality. A test panel, consisting of trained or untrained panelists, is employed to carry out the evaluation, depending on the purpose and testing method. The sensory evaluation measures the product's quality and tests the consumer's acceptance of the product by soliciting the panelists' satisfaction levels in terms of their liking or disliking of the product. The hedonic scale, consisting of a 5-point, 7-point, or 9-point liking scale, is used to translate the panelists' feelings into numerical data. A just-about-right scale test may be used to determine the product's direction for further improvement. In this study, sensory evaluation was conducted using the 9-point hedonic scale and just-about-right scale to test satisfaction or acceptance. (Pangborn, R.M., 2003).

Acceptance Test

The Acceptance Test is a psychological process through which an individual progresses from first hearing about an innovation to final acceptance, referring to the decision of the person who may become a regular user of the product. The consumer acceptance test comprises the following stages: 3.1) awareness; at this initial stage of the acceptance process, consumers receive news of new product innovations. The exposure is neutral without generating enough interest to learn more about the product. 3.2) interest; at this stage, the consumer develops an interest in the product by seeking information on how it can benefit them. 3.3) evaluation; the consumer draws a conclusion about the information by considering whether further information is needed. It represents the nature of a new product mind experiment. If the evaluation is satisfactory, the consumer will try the product. But if the state of mind is dissatisfied, they will reject the product. 3.4) trial; at this stage, consumers try the product, and the experimental experience provides important information for acceptance or rejection. And 3.5) acceptance; this is the stage where the consumers decide to use the product as a result of the satisfactory trial evaluation in step 3.4. (Chaikulsareewath, A. and Singhapol, S., 2016). In conclusion, consumers receive information about new products or innovations without any sensation before accepting them. If they find the product interesting, they will search for information on its benefits. If they are satisfied, they will try and accept the product, but if they are not satisfied, they will not be interested or will not try the product. Literature reviews and related concepts indicate that product tests, sensory evaluation, and acceptance tests can provide guidelines for the social enterprise development of "Kae Noi" Green Products from Ethnic groups to increase farmers' income, promote food security at the community and society levels.

Consumer acceptance of Cape Gooseberry processed products in Muang Chiang Mai District, Chiang Mai Province is important for various reasons. First and foremost, it can help in determining the feasibility of commercializing the product. If consumers like the product and are willing to buy it, it can lead to the creation of a new market, which can benefit the farmers who grow the Cape Gooseberry, as well as the social enterprise "Kae Noi" Green Products from Ethnic groups that process the products. Increased sales of Cape Gooseberry processed products can also lead to increased income for the farmers, which can improve their standard of living and promote economic growth in the community. Secondly, consumer acceptance can help in identifying the strengths and weaknesses of the product. Consumer feedback can help the research team in identifying areas where the product needs improvement. This can lead to the development of better products that are tailored to the needs and preferences of the consumers. It can also help in identifying potential marketing opportunities and strategies for the product. Thirdly, consumer acceptance of Cape Gooseberry processed products can promote food security in the community. Cape Gooseberry is a nutritious fruit that is rich in vitamins and minerals. Increased consumption of Cape Gooseberry processed products can lead to a more diverse and balanced diet, which can improve the overall health and wellbeing of the community. Finally, the study on consumer acceptance can contribute to the overall body of knowledge on product testing and consumer behavior. The research findings can provide insights into consumer preferences and behaviors, which can be applied to other products and industries. It can also provide a framework for future studies on product development and consumer acceptance.

In conclusion, consumer acceptance of Cape Gooseberry processed products in Muang Chiang Mai District, Chiang Mai Province is important for the economic development of the community, the promotion of food security, and the advancement of knowledge on product testing and consumer behavior.

DATA AND EMPIRICAL STRATEGY

The research was designed as qualitative research, which served as a tool for implementing the project. The questionnaire was used to measure the variables and its contents covered various concepts derived from the literature review to ensure relevance and consistency with the measurement variable objectives. To achieve this, the research team conducted a literature review to pre-define a broad topic or issue covering the subject matter of the objectives.

The population and sample consisted of people from Chiang Mai who purchase products at the Doi Kham Royal Project outlet in Mae Hia subdistrict, Mueang Chiang Mai district, Chiang Mai province. The target group was selected using a nonprobability sampling method, and a quota of 400 people was set through random selection or convenience and purposive sampling to achieve the objectives of the project (Kajornatthapol et al., 2020).

The research tool utilized questionnaires, interviews, and tests of consumer acceptance of processed products. The questionnaire was a checklist divided into three parts. The first part consisted of general information about the respondents, including gender, age, occupation, monthly income, marital status, and number of family members. The second part measured the level of consumer expectations towards processed agricultural products using Likert's rating scale and Osgood's Semantic Differential Scale. Finally, the third part tested packaged Cape Gooseberry processed products using a sensory test on glutinous brown rice.

The statistics used in the research were appropriate and consistent with the statistical data to meet the research objectives. Basic statistics and descriptive statistical analysis were used to explain the properties or characteristics of the distribution of variable data by using software for measuring the percentage, mean, and standard deviation. Statistical hypothesis testing was used to analyze the respondents using logistic regression analysis. The alpha coefficient criterion had a value not lower than 0.70, testing for the validity and confidence of the questionnaire. The result of the alpha coefficient of 0.85 was considered acceptable and able to collect data with the sample group (Kajornatthapol et al., 2020).

RESULTS AND DISCUSSION

In terms of the general information of the respondents, it was found that the majority of the respondents were female, with a total of 246 respondents representing 61.50%. The age range of 18-30 years was the most common, with a total of 96 respondents representing 24.00%. A majority of the respondents had a bachelor's degree or higher, with a total of 205 respondents representing 51.25%. Additionally, 74 respondents representing 18.30% reported that they run their own business, while 188 respondents representing 47.00% reported an income not exceeding 10,000 Baht per month. Moreover, 258 respondents representing 64.75% reported being married, and 233 respondents representing 58.25% reported having a family of 4 people or more.

In terms of the respondents' expectations towards processed agricultural products, specifically "Kae Noi" Green Products from Ethnic groups when compared to other agricultural processed products before the sensory test, it was found that the respondents were interested in the product and were interested in buying agricultural processed products of "Kae Noi" Green Products from Ethnic groups, with mean values of 3.61 ± 1.04 and 3.46 ± 1.12 , respectively. These results suggest that the respondents were very interested in purchasing the products, as shown in Table 1.

In terms of the expectation score for product characteristics compared to other agricultural processed products, the highest score was observed for texture, with a mean of 1.02 ± 1.12 . This was followed by taste with a mean of 0.88 ± 1.03 , scent with a mean of 0.66 ± 1.02 , and color with a mean of 0.65 ± 1.02 , as presented in Table 2.

Table 1 Mean and standard deviation of product interest levels.

Topic	Number and percentage of interest levels ²					□ ±S.D ¹ (Interpretation)
	Extremely interested (5)	Very interested (4)	Moderately interested (3)	Slightly interested (2)	Not at all interested (1)	
Interest in the product	106 (26.50)	87 (21.80)	157 (39.20)	44 (11.00)	6 (1.50)	3.61±1.04 (Very interested)
Interest in purchasing the product	101 (25.20)	64 (16.00)	169 (42.20)	49 (12.20)	17 (4.20)	3.46±1.12 (Very interested)

Remarks: ¹The presented data is expressed as the mean value plus or minus the standard deviation, using a 5-point interest scale where 1 corresponds to "Not at all interested," 2 to "Slightly interested," 3 to "Moderately interested," 4 to "Very interested," and 5 to "Extremely interested."

Table 2 shows the mean and standard deviation of the level of expectation of respondents regarding the characteristics of "Kae Noi" Green products from ethnic groups when compared to other agricultural processed products.

Characteristic	Number and percentage of expectation on product characteristics ²							□ ±S.D ¹ Interpretation
	Much better (3)	Better than average (2)	Slightly better (1)	The same (0)	Slightly worse (-1)	Moderately worse (-2)	Much worse (-3)	
Color	23 (5.70)	37 (9.20)	162 (40.50)	145 (36.20)	25 (6.20)	5 (1.20)	3 (0.80)	0.65±1.02
Taste	34 (8.40)	63 (15.80)	142 (35.50)	144 (36.00)	14 (3.50)	3 (0.80)	0 (0.00)	0.88±1.03
Scent	29 (7.20)	38 (9.50)	127 (31.80)	190 (47.50)	9 (2.20)	4 (1.00)	3 (0.80)	0.66±1.02
Texture	48 (12.00)	82 (20.50)	122 (30.50)	133 (33.20)	12 (3.00)	1 (0.20)	2 (0.50)	1.02±1.12

Remarks: ¹The data value is the mean ± standard deviation, ² expectation scale, (-3) = much worse, (-2) = moderately worse, (-1) = slightly worse, 0 = the same, 1 = slightly better, 2 = better than average, 3 = much better.

The sensory acceptance test for the characteristics of processed agricultural products “Kae Noi” green products from ethnic groups can be divided into the following categories: 1) Product liking information, where respondents gave the highest score for the softness of the product's characteristic with a mean of 6.97 ± 1.34 , followed by taste with a mean of 6.70 ± 1.35 . The mean overall liking was 6.65 ± 1.35 , which is classified as slightly liking. Scent had a mean of 5.94 ± 1.56 , and color had a mean of 5.61 ± 1.25 , both of which were classified as neither liking nor disliking. Consumer acceptance test scores of 6 and above are considered accepted by consumers (Resurrection, 1998), as shown in Table 3. 2) Product characteristics in terms of color, scent, taste, and texture of processed agricultural products “Kae Noi” green products from ethnic groups were at the appropriate level, receiving opinions higher than or equal to 60%, as shown in Table 4. And 3) The acceptance and decision to purchase processed agricultural products “Kae Noi” green products from ethnic groups were 87.75% and 78.60%, respectively.

Table 3 Mean and standard deviation of the level of liking for the characteristics of the products.

Characteristic	Number and percentage of liking scores for the characteristics of the products ²									□ ±S.D ¹ Interpretation
	Strongly like (9)	Like (8)	Moderately like (7)	Mildly like (6)	Neither like nor dislike (5)	Mildly dislike (4)	Moderately dislike (3)	Dislike (2)	Strongly dislike (1)	
Color	9 (2.20)	23 (5.80)	50 (12.50)	106 (26.50)	165 (41.20)	33 (8.20)	10 (2.50)	3 (0.80)	1 (0.20)	5.61±1.25 (Neither like nor dislike)
Scent	29 (7.20)	46 (11.50)	54 (13.50)	87 (21.80)	134 (33.50)	36 (9.00)	8 (2.00)	3 (0.80)	3 (0.80)	5.94±1.56 (Neither like nor dislike)
Taste	41 (10.20)	67 (16.8)	114 (28.50)	118 (29.50)	38 (9.50)	15 (3.80)	5 (1.20)	2 (0.50)	0 (0.00)	6.70±1.35 (Mildly like)
Softness of texture	54 (13.50)	83 (20.80)	132 (33.00)	86 (21.50)	25 (6.20)	14 (3.50)	5 (1.20)	1 (0.20)	0 (0.00)	6.97±1.34 (Mildly like)
Overall liking	32 (8.00)	74 (18.50)	116 (29.00)	108 (27.00)	53 (13.20)	9 (2.20)	4 (1.00)	3 (0.80)	1 (0.00)	6.65±1.35 (Mildly like)

Remarks: ¹The data value is the mean ± standard deviation, ² the liking score was on 9-point scale, 1 = strongly dislike, 2 = dislike, 3 = moderately dislike, 4 = mildly dislike, 5 = neither like nor dislike, 6 = mildly like, 7 = moderately like, 8 = like, 9 = strongly like.

Table 4 Quality score for sensory characteristics in terms of direction in product development.

Characteristic	Opinion level				
	Greatly increased (Percentage)	Slightly increase (Percentage)	Alright (Percentage)	Slightly decrease (Percentage)	Greatly decrease (Percentage)
Color	5 (1.2)	36 (9.0)	278 (69.5)	79 (19.8)	2 (0.5)
Scent	15 (3.7)	40 (10.0)	238 (59.5)	97 (24.2)	10 (2.5)
Taste	11 (2.8)	69 (17.2)	307 (76.8)	13 (3.0)	0 (0.0)
Softness of texture	16 (4.0)	71 (17.8)	290 (72.5)	21 (5.2)	2 (0.5)

The study analyzed the acceptance and purchase decisions of the processed agricultural product "Kae Noi" green products from ethnic groups. Logistic regression was used to determine the factors that influenced the respondents' acceptance of the product, and the results showed that color, scent, and softness of texture significantly affected the acceptance rate (87.00% hit rate). The Wald chi-square values for scent, softness of texture, and color were 9.345 ($p = 0.002$), 6.629 ($p < 0.010$), and 4.885 ($p = 0.027$), respectively. The odd ratios for softness of texture, color, and scent were 1.712, 1.491, and 0.568, respectively, indicating that the characteristics of softness of texture and color had a positive effect on product acceptance, while the scent had a negative effect. Specifically, an increase in the liking score of scent by 1 point would decrease the likelihood of product acceptance by 0.565 times, while an increase in the liking score of color and softness of texture by 1 point would increase the acceptance rate by 1.491 and 1.712 times, respectively. The product acceptance equation is:

$$Y = -2.528 + 0.399 * \text{color} - 0.565 * \text{scent} + 0.334 * \text{taste} + 0.538 * \text{softness of texture}$$

as shown in Table 5.

Table 5 Logistic regression analysis of the factors influencing the acceptance of processed agricultural products "Kae Noi" green products from ethnic groups among the respondents.

Sensory characteristics	Beta	Wald's Chi square	Significant (p ≤ 0.05)	Odd ratio [Exp(B)]
Color	0.399	4.885	0.027*	1.491
Scent	-0.565	9.345	0.002*	0.568
Taste	0.334	1.953	0.162	1.397
Softness of texture	0.538	6.629	0.010*	1.712
constant	-2.528	8.209	0.004	0.080

hit rate = 87.0%

A study was conducted to determine the factors influencing the purchase decision of respondents towards processed agricultural products "Kae Noi" green products from ethnic groups. The results showed that the softness of texture is the most influential characteristic on the purchase decision of respondents (with a hit rate of 79.00%), and the Wald chi-square value for this characteristic was the highest at 4.104 (p = 0.043). The analysis of odd ratios revealed that the softness of texture had the highest odd ratio of 1.402, indicating its significant effect on the decision to purchase "Kae Noi" green products from ethnic groups. This means that an increase in the liking score for the softness of texture by 1 point will increase the purchase decision by 1.402. The equation for the product purchase decision is shown in Table 6 as follows:

Product purchase decision (Y) = -3.643 + 0.277color – 0.160scent + 0.328taste + 0.338softness of texture*.

Table 6 Factors affecting the purchase decision of processed agricultural products “Kae Noi” green products from ethnic groups using logistic regression method.

Sensory characteristics	Beta	Wald's Chi square	Significant (p ≤ 0.05)	Odd ratio [Exp(B)]
Color	0.277	3.394	0.065	1.319
Scent	-0.160	1.462	0.227	0.852
Taste	0.328	2.895	0.089	1.389
Softness of texture	0.338	4.104	0.043*	1.402
constant	-3.643	21.155	< 0.001	0.026

hit rate = 79.0%

CONCLUSIONS

There are three main issues to be discussed regarding the acceptance of processed cape gooseberry products by consumers in Muang Chiang Mai district, Chiang Mai province. Firstly, before the sensory test, respondents showed great interest in the agricultural processed products of “Kae Noi” Green Products from Ethnic groups, with a mean value of 3.61 ± 1.04 and 3.46 ± 1.12, respectively. The sensory acceptance test revealed that respondents favored the softness of texture the most, with a mean of 6.97 ± 1.34, followed by taste with a mean of 6.70 ± 1.35, and overall liking with a mean of 6.65 ± 1.35. The results are consistent with the research of Surachai U., Niramom U., Rathanan P. (2015), who stated that the expectations and attractiveness of a product can influence consumers' interest in purchasing it. Secondly, the logistic regression analysis showed that color, scent, and softness of the texture affected the acceptance of the respondents. The product acceptance (Y) = -2.528 + 0.399color – 0.564scent + 0.334taste + 0.538softness of texture*. The odd ratios were 1.712, 1.491, and 0.568, respectively. Finally, softness of texture was found to be the main factor that affected the purchase decision of the processed agricultural products “Kae Noi” green products from ethnic groups. These findings suggest that entrepreneurs should consider factors such as social value and consumer health when developing a product, as they can influence the popularity, culture, and tradition of a society, and ultimately, the future sales of the product.

In summary, this research reveals the following findings: First, the respondents' expectations towards "Kae Noi" green products, a type of processed agricultural product from ethnic groups, were positive before the sensory test. They found the products attractive and interesting to purchase, indicating that the products'

characteristics are deemed acceptable by consumers. Second, the acceptance and purchase decision of these products can be improved by enhancing the softness of texture, as a one-point increase in this factor can increase the purchase decision of the product. Furthermore, the product's scent, taste, and color need to be developed to make it more appealing to the target group. Third, when deciding to purchase these products, consumers consider both the packaging and price. Therefore, the packaging should be visually appealing and suitable for the product at a reasonable price point. Additionally, it is suggested that the management of information systems and distribution should establish an online market to align with the organization's operations, making it easier to sell the developed product at a reasonable price with attractive packaging. (Mohamed H., et. al., 2024 and Hanadi A. Salhab, 2024).

To improve the development of "Kae Noi" green products, it is recommended to focus on four important factors. First, enhancing the quality of processed products, including the softness of texture, scent, taste, and color, can increase the acceptance and interest of consumers, promoting purchase decisions. Second, social values should be considered, including tradition and culture, which can be used to promote the popularity of the products. Third, it is suggested that the product's health benefits should be highlighted to appeal to consumers who prioritize their health and nutrition. Fourth, developing management information systems and digital markets can help create new markets and networks for market management.

REFERENCES

- Chaikulsaareewath, A. and S. Singhapol. (2016). Wine production from Pineapple mixed with Carrot. *Agricultural Science Journal*, 47(2), 165-169. <https://scijournal.buu.ac.th/index.php/sci/issue/view/102>.
- Crawford, M. and Benedetto, A.D. (2003). *New Product Management*. 7ed. Cambridge, MA: Perseus.th.
- Hanadi A. Salhab. (2024). Analytical Study on the Impact of Digital Marketing Strategies and Performance of Small and Medium-sized Companies. (2024). *International Journal of Religion*, 5(7), 248-255. <https://doi.org/10.61707/aars0p68>.
- Kae Noi Royal Project Cooperative. (2020). *Annual Report Year 2020*. Chiang Mai: Kae Noi Royal Project Cooperative.
- Osgood, C.E., Suci, G.J., & Tannenbaum, P.H. (1957). *The measurement of meaning*. Urbana: University of Illinois press.
- Mohamed H. Albahiri, Ali Albashir Mohammed and Meznah M.Al alhareth. (2024). A Proposed Educational Program Based on Project-Based Learning (PBL) for Teaching Home Economics and its Impact on Developing Creative Thinking and Problem-solving Skills of Third-grade Intermediate Female Students. (2024). *International Journal of Religion*, 5(7), 391-406. <https://doi.org/10.61707/gccd6175>.
- Pangborn, R.M. (2003). Sensory techniques of food analysis. In *Food Analysis, Principles, and Techniques*. Volume 1: Physical Characterization. pp. 61-68. By D.W. Gruenwedel; and J.R. Whitaker (edited), New York: Marcel Dekker. <https://so05.tci-thaijo.org/index.php/pimjournal/article/view/228941>.
- Pongwirithon K., Kamchai and Panturee W. (2022). Social Return on Investment Assessment from Operations of Community-Based Innovation and Career Development Fund: Information Systems for Managing Community Financial Institutions. *Res Militaris*, 12(2), 1174-1184. <https://resmilitaris.net/index.php/resmilitaris/article/view/188>.
- Schlten, P., Nicholls, J., Olsen, S., & Galimidi, B. (2006). *Social return on investment: a guide to SROI analysis*. Amstelveen: Lenthe publishers.
- Surachai U., Niramom U., Ratthanan P. (2015). Consumer Acceptance and Behavior Toward Thai Herbal Tea Products. *Srinakharinwirot Research and Development (Journal of Humanities and Social Sciences)*, 7(13), 187-199. <https://so04.tci-thaijo.org/index.php/swurd/article/view/54532>
- Thai Industrial Standards Institute (TISI). (2003). *Thai community product standard of fruit wine (TCSP, 2/2546)*. Bangkok: Thailand.