

Product Development of Jelly from Pineapple Juice by Community Enterprise, Ban Nong Pu Lok Women's Role Development Group, Mueang District, Prachuap Khiri Khan Province

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Abstract

The objectives of this study were 1) to develop 4 formulas of jelly from pineapple juice, consisting of pineapple juice jelly; aloe vera in pineapple juice jelly; dragon fruit in pineapple juice jelly; and jackfruit in pineapple juice jelly; 2) to design and develop packaging suitable for 4 formulas of pineapple juice jelly products; 3) to test the market and study the level of consumer acceptance towards 4 formulas of pineapple juice jelly products; 4) to take the lessons from the textbook on the development of jelly products from 4 formulas of pineapple juice; and 5) to transfer technology to communities that are target groups such as community enterprises and communities in Prachuap Khiri Khan Province. Both qualitative and quantitative methodologies were employed as follows: 1) An evaluation form for jelly products from 4 prototypes of pineapple juice by 3 experts. Experts from Community Enterprise Group, Ban Nong Pulok Women's Role Development Group; 2) Market testing and acceptance assessment form for 4 formulas of jelly products from pineapple juice by 50 food and beverage business operators in Prachuap Khiri Khan Province; 3) Questionnaire surveyed the introduction of the prototype pineapple juice jelly product development manual to transfer knowledge to the community. The IOC value with a sample of 30 people and testing the confidence value was more than 0.7, 4) Evaluation form for the transcription of textbooks on the development of jelly products from pineapple juice; 5) Evaluation form for technology transfer to the community.

Keywords: Jelly from Pineapple Juice, Community Enterprise, Small and Medium Enterprises

Introduction

To support a local community, it is significant that product and brand are developed based on the principle of utilizing local wisdom and reflecting the community identity through a process that combines creativity born of knowledge. Moreover, the role of innovation is brought into the development process in order to bring the significance of creative development to drive a broad development that covers the economic, social, cultural and environmental sectors in a culturally connected manner. Local wisdom combined with the use of knowledge and innovation development are aimed to be creative and environmentally friendly, which is the current world development trend (Satyophas, 2012).

Generating income by bringing local resources to create value as products for sale is concerned as an important national policy of the 12th Economic and Social Development Plan (2017-2021), which is the first plan to be used as a linkage mechanism for driving Thailand's

development according to the 20-year national strategy. by restructuring production and creating economic opportunities in each phase of the value chain. It is emphasis on strengthening fundamentals economic capital to support capacity building of existing production bases and income bases as well as upgrading the value chain by using R&D technology to create innovative production that is environmentally friendly and in line with market demands. This, then, leads to creation an entrepreneur society which is a hub of business skills to keep up with technology changes by focusing on the process of developing community networks under the foundation of modern knowledge local wisdom and culture with a higher quality and value-added product. This will be an ultimate result of sustainable happiness of Thai society according to the philosophy of sufficiency economy in order to balance development in all dimensions by restructuring the economy towards a new growth direction. that aims to develop the internal economy country to be strong to reduce dependence on external factors by strengthening entrepreneurs in the manufacturing and service sectors especially small and medium enterprises to use wisdom, science, technology, innovation and creativity to upgrade to knowledge-based production and service and environmentally friendly as well as to have links with countries in different regions on the basis of interdependence as well as being immune to changes from outside and at the national level (Thipapal, 2004; andRaksachon, 2018).

Pineapple is the main economic crop of Prachuap Khiri Khan Province. Because the condition of the soil, the climate is suitable for cultivation in the province. Therefore, each year, the quantity of pineapple products is brought to the market. Even though there is a canned pineapple processing industry to support the production, the pineapple price continues to fluctuate continuously. Therefore, farmers in the area of Tambon Bo Nok, Muang District, Prachuap Khiri Khan Province have been grouped together and established "Community enterprise, Ban Nong Pu Lok Women's Role Development Group" in bringing pineapple products to be privatized by management in the form of community enterprises (Sereerat, 2000).

Community Enterprise Group, Ban Nong Pu Lok Women's Role Development, Bo Nok Sub-district, Mueang Prachuap Khiri Khan District, located at House No. 7/2, Village No. 9, Rai Nok Subdistrict, Mueang District, Prachuap Khiri Khan Province has gathered a group of villagers to produce pineapple juice "Rai Wan" for sale using local raw materials. Usually, local villagers grow pineapples to sell to factories as their main occupation, but later in the period, pineapple prices have dropped and there are other parts of pineapples have lost weight in factory grades. The size is not desired and cannot be sent to the factory, the leftovers cannot be disposed of, causing damage to farmers. Therefore, a group of villagers was gathered to solve such problems was established, organized by Mr. PitichaiPluemchit as the chairman of the Community Enterprise Group, Ban Nong Pulok Women's Role Development Group. and has an operating committee by using the name of pineapple juice production as "Rai Wan" in order to create product value, reduce price risks of pineapples and increase income for the group members (Satyophas, 2012).

At present, the pineapple juice of the community enterprise of Ban Nong Pulok Women's Role Development Group has received promotion from various departments until the development of 100% pineapple juice to be bottled beverages. It can produce 1,000 sets of pineapple juice per day with production standards from clean rooms. and have modern tools to control the quality of cleanliness, no preservatives, GMP standard, Halal certified, and the Food and Drug Administration (FDA) certified. Processing has been upgraded to meet HACCP standards to increase consumer confidence and compete with well-known brands sold in the general market.

Research Objectives

1) To develop 4 formulas of jelly from pineapple juice, consisting of pineapple juice jelly; aloe vera in pineapple juice jelly; dragon fruit in pineapple juice jelly; and jackfruit in pineapple juice jelly;

2) To design and develop packaging suitable for 4 formulas of pineapple juice jelly products;

3) To test the market and study the level of consumer acceptance towards 4 formulas of pineapple juice jelly products;

4) Take the lessons from the textbook on the development of jelly products from 4 formulas of pineapple juice; and

5) Transfer technology to communities that are target groups such as community enterprises and communities in Prachuap Khiri Khan Province

Research Methodology

Population and sample groups according to the research objectives were divided as follows:

Objective 1: To develop 4 formulas of jelly from pineapple juice, consisting of pineapple juice jelly; aloe vera in pineapple juice jelly; dragon fruit in pineapple juice jelly; and jackfruit in pineapple juice jelly. The sources are as follows. Ban Nong Pulok Women's Role Development Community Enterprise is located at 7/2 Village No. 9, Rai Nok Sub-district, Mueang District, Prachuap Khiri Khan Province.

Objective 2: To design and develop packaging suitable for 4 formulas of pineapple juice jelly products.

Objective 3: was to test the market and study the level of consumer acceptance towards 4 formulas of pineapple juice jelly products. The population used in this study were food and beverage business operators in Prachuap Khiri Khan Province. The sample group consisted of 50 food and beverage business operators in Prachuap Khiri Khan Province by selective selection and 400 consumers.

Research Instrument

This research employed both qualitative and quantitative research as follows:

1. An evaluation form for jelly products from 4 prototypes of pineapple juice by 3 experts. Experts from Community Enterprise Group, Ban Nong Pulok Women's Role Development Group;

2. Market testing and acceptance assessment form for 4 formulas of jelly products from pineapple juice by 50 food and beverage business operators in Prachuap Khiri Khan Province;

3. Questionnaire surveyed the introduction of the prototype pineapple juice jelly product development manual to transfer knowledge to the community. The IOC value with a sample of 30 people and testing the confidence value was more than 0.7.

4. Evaluation form for the transcription of textbooks on the development of jelly products from pineapple juice, consisting of 4 formulas consisting of 1) book form 2) content 3) utilization 4) business concordance and 5) cost of production for 100 people.

5. Evaluation form for technology transfer to the community consisting of 1) product development textbooks 2) process of transferring knowledge and skills 3) raw materials, equipment and tools 4) teaching facilities 5) lecturers / researchers 6) be an occupation 7) overall acceptance level for 50 people

Data analysis and statistics used in data analysis

Data analysis and statistics used in data analysis of pineapple juice jelly product development, the researcher has the following steps:

1. Frequency and percentage of information about the consumer's basic personal characteristics towards the acceptance level of the prototype pineapple juice jelly product by evaluating the consumer's personal characteristics in 5 aspects of 1) gender 2) age 3) educational level 4) occupation 5) overall Income.

2. Mean and Standard Deviation of consumer acceptance level towards model pineapple juice jelly products by food business operators and consumers in Prachuap Khiri Khan Province of 1) taste 2) texture 3) product color 4) product smell 5) shape and 6) overall acceptance. The average score was then interpreted according to the following criteria:

4.21 – 5.00 refers to the highest level.

3.41 – 4.20 refers to a high level.

2.61 – 3.40 refers a moderate level.

1.81 – 2.60 refers to a low level.

1.00 – 1.80 refers to the lowest level.

Project implementation process

Project implementation process for the development of jelly from pineapple juice was the following steps:

Jelly products from pineapple juice



1. Pour the pineapple juice into the prepared container.



2. Pour 10 g of agar powder into the pineapple juice, heat until boiling.



3. Scoop the pineapple juice mixture and agar powder that has been heated and put it in the prepared package.



4. Wait until the pineapple juice jelly sets. Then, scoop the candied fruit into it.



5. Scoop the pineapple juice mixture and agar powder that has been heated into the packaging that is filled with fruit.



Results

Phase 1: Demographic results

Table 1: Result of Demography

Demographic data	n	Percentage
Gender		
Male	192	48.00
Female	208	52.00
total	400	100.00
Age		
15-25 years	289	72.25
26-35years	93	23.25
36-45years	15	3.75
46-55years	3	0.75
More than 56years	-	-
Total	400	100.00
Educational Background		
Grade 7-9	2	0.50
Grade 10-12 or equivalent	86	21.50
Diploma or equivalent	3	0.75
Undergraduate	302	75.50
postgraduate	7	1.75
Total	400	100.00
Occupation		
Students	210	52.50
Public sector employee	39	9.75
Tourist	64	16.00
Government officer	17	4.25
Business owner	70	17.50
Total	400	100.00
Income (Baht)		
Less than9,999	159	39.75
10,000-15,000	103	25.75
15,001-20,000	36	9.00
20,001-25,000	92	23.00
25,001-30,000	10	2.50
More than 30,001	-	-
Total	400	100.00

Phase 2: Results of product acceptance of all 4 formulas of pineapple juice jelly products

Table 2: Mean and Standard Deviation of product acceptance of all 4 formulas of pineapple juice jelly products

Product acceptance	\bar{x}	S.D.	Level
Pineapple Juice Jelly	4.48	0.63	High
Aloe Vera in Pineapple Juice jelly	4.50	0.67	Highest

Dragon fruit in pineapple juice jelly	4.33	0.65	High
Jackfruit in pineapple juice jelly	4.57	0.60	Highest
Total	4.47	0.64	High

Phase 3: Results of the analysis of information on the feasibility of commercial distribution

Table 3: Mean and standard deviation for commercial distribution.

Commercial Distribution	\bar{x}	S.D.	Level
Pineapple Juice Jelly	4.51	0.53	Highest
Aloe Vera in Pineapple Juice jelly	4.69	0.50	Highest
Dragon fruit in pineapple juice jelly	4.50	0.58	Highest
Jackfruit in pineapple juice jelly	4.59	0.57	Highest
Total	4.57	0.54	Highest

Phase4: Results of the transcription of textbooks on the development of jelly products from pineapple juice, 4 formulas in overall

Table 4:Mean and Standard Deviation of product development textbook lessons.

Aspect	\bar{x}	S.D.	Level
Book appearance	4.70	0.46	Highest
Content	4.50	0.50	Highest
Utilization	4.70	0.46	Highest
Business relation	4.40	0.49	High
Production Cost	4.70	0.47	Highest
Total	4.60	0.47	Highest

Phase 5:Results of technology transfer to target communities, entrepreneurs and educational institutions at the level of basic education and tertiary in Prachuap Khiri Khan Province in overall

Table 5: Mean and Standard Deviation of technology transfer to target communities, entrepreneurs and educational institutions at the level of basic education and tertiary in Prachuap Khiri Khan Province

Aspect	\bar{x}	S.D.	Level
Product development textbook	4.82	0.39	Highest
Process of transferring knowledge and skills	4.72	0.45	Highest

Raw materials, equipment, tools	4.70	0.46	Highest
Teaching feasibilities	4.78	0.42	Highest
Lecturer / Researcher	4.76	0.43	Highest
Be an occupation	4.88	0.33	Highest
Overall acceptance level	4.84	0.37	Highest
Total	4.79	0.31	Highest

Conclusion and Discussion

The results of the satisfaction analysis to test the market and study the level of consumer acceptance towards the jelly from pineapple juice product with four formulas were as follows:

1. The results of demographic analysis were: the majority of respondents were female (52%), age between 15-25 years (72.25%), bachelor's degree (75.50%) and income less than 9,999 baht (39.75%).

2. The overall results of the data analysis on the acceptance of all 4 formulas of pineapple juice jelly products were at a high level ($\bar{x} = 4.47$). The highest level was jackfruit in pineapple juice jelly, followed by aloe vera in pineapple juice, pineapple juice jelly and dragon fruit in pineapple juice jelly, respectively.

3. The overall results of the feasibility analysis of commercial distribution were at the highest level ($\bar{x} = 4.57$). The highest level was aloe vera in pineapple juice jelly, followed by jackfruit in pineapple juice jelly, pineapple juice jelly and dragon fruit in pineapple juice jelly, respectively.

4. The overall results of the analysis of data on the transcription of textbooks on pineapple juice jelly product development of 4 formulas were at a high level ($\bar{x} = 4.60$). The highest levels were Utilization, Book appearance and Production cost, followed by Content and Business relation, respectively.

5. The overall results of the analysis of satisfaction in technology transfer to target communities and entrepreneurs and educational institutions were at the highest level ($\bar{x} = 4.79$). The highest level was an occupation, followed by overall acceptance level, product development textbooks, process of transferring knowledge and skills, and raw materials, equipment and tools, respectively.

The findings of the study are consistent with the study of Chanloy (2018) who conducts a study on potential development of community entrepreneurs according to the creative economy concept. In his study, the idea is to take raw materials within the community that are left for sale to be processed to add value in order to generate income for people in the community who lacks knowledge of creative product development. Therefore, a model for developing the potential of community entrepreneurs is established according to the creative economy concept. The SCPD Integrated Model then is implemented to train the community how to develop community products based on creative product concept. The community enterprises have developed creative products. The results show that consumers have a tendency to make a decision to buy products at a high level with an average of 3.95.

Recommendations

1. Pineapple juice jelly products should be refrigerated to maintain the nutritional quality of the product because the products are fresh and non- preservatives.
2. The product value should be added to the community, especially local communities to generate income and create the occupation.
3. The textbook for product development of pineapple juice jelly should be adapted to suit for higher education institutions and communities as a learning center for students.
4. The lecturer or researcher should transfer the knowledge to be easy for the participants to understand and be able to apply knowledge to business relation.

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Appendix

