



Innovative Pandan Pudding Formulation: Sensory Evaluation and Market Strategy Insights Using SWOT and Ansoff Matrix



1 Kousalya Padmanabhan* 2 Carolyn Loong Yook Lean, 3 Royal Owunna

1*-2 .Faculty of Applied Science, UCSI University, Kuala Lumpur, Malaysia

3. Department of Professional Development and Continuing Education, Faculty of Educational Studies, Universiti Putra Malaysia, Selangor, Malaysia

Corresponding Author: kousalya.796@gmail.com

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Abstract

The development and market launch of pandan pudding aligns with the growing demand for functional foods that offer additional health benefits beyond basic nutrition. This study investigates a formulated pandan pudding's strategic and sensory aspects through a combination of SWOT analysis, the Ansoff Matrix, and sensory evaluation. The SWOT analysis highlights the product's strengths, such as its nutritious value and appeal to health-conscious consumers, while also identifying challenges like competition and ingredient availability. The Ansoff Matrix provides strategic growth options, emphasizing product development and market diversification, particularly in the Asia-Pacific region where there is strong demand for plant-based desserts. A sensory evaluation involving 50 untrained panelists aged 25-65 assessed the product's appearance, texture, flavor, aroma, and overall acceptability, revealing high preferences for the control formulation and F2 (6% soy protein isolate and monk fruit sweetener). Despite some feedback regarding texture, the overall acceptability was favorable, indicating potential market success, especially among older consumers seeking nutritious, plant-based options. The study concludes that combining sensory insights with strategic business analysis ensures the pandan pudding is well-positioned to meet consumer expectations and thrive in a competitive marketplace.

Keywords:

Pandan Pudding, SWOT Analysis, Ansoff Matrix, Sensory.

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Introduction

In recent years, the concept of functional foods has gained increasing attention in academic research and the food industry. Functional foods are those that offer additional health benefits beyond basic nutrition, often by providing bioactive compounds that can positively impact health (Bultosa, 2016). These foods are particularly appealing to health-conscious consumers, as they play a pivotal role in preventing nutrition-related diseases and promoting physical and mental well-being (Menrad, 2013). As consumer interest in health and wellness continues to grow, the food industry is under pressure to develop products that align with these demands. A prime example of this trend is the rise of plant-based and exotic ingredients in everyday food products. Ingredients like pandan, which is known for its unique flavor and potential health benefits, are gaining popularity among consumers seeking innovative, healthy options. Launching pandan-based products, such as pandan pudding, not only capitalizes on these trends but also requires careful consideration of consumer preferences and market strategies (Menrad, 2013).

To ensure the success of a new product like pandan pudding, businesses must go beyond sensory appeal and address strategic market considerations. Tools such as SWOT analysis and the Ansoff Matrix are essential for assessing both the internal and external factors that could impact the product's success (Świąder & Marczewska, 2021; Kruachottikul et al., 2023). SWOT analysis helps identify the product's strengths, weaknesses, opportunities, and threats, while the Ansoff Matrix provides guidance on growth strategies, from market penetration to diversification (Jelonek et al., 2022; DuCoin & Kuo, 2024).

Understanding the target demographic is key for pandan pudding to meet consumer expectations and achieve market success. Sensory evaluations, combined with strategic market analysis, can help ensure the product resonates with consumers in the 25-65 age group, who are likely to be health-conscious and open to trying new, functional foods.

In this study, we aim to explore the business components such as SWOT and Ansoff Matrix, and also the sensory evaluation of the developed pandan pudding.

Materials and Methods

Business Components

The SWOT analysis (alternatively SWOT Matrix) is one of the most popular analytical methods. This analysis is a tool to optimize the business management strategy or build a new strategic plan. The SWOT analysis can be carried out for a product or industry. It involves specifying the objective of a business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieve the purpose (Sammut-Bonnici & Galea, 2015). The SWOT analysis was based on my opinion towards the product for the formulated pandan pudding. I conducted the available market product available marketed pandan pudding, based on the knowledge—table 1 characteristics considered for the SWOT analysis of the developed pandan pudding. The SWOT analysis was concluded for the formulated pandan pudding according to these characteristics.

Table 1: Characteristics considered for SWOT analysis

Strength	Weakness
<ul style="list-style-type: none">Highly nutritiousNo PreservativeDevelopment of low-sugar pudding with high quality for consumers	<ul style="list-style-type: none">Availability of the raw materialsPricing of raw materials
Opportunities	Threats
<ul style="list-style-type: none">Beneficial geographical location of the primary marketsHuge market for developed products in the Asia Pacific region	<ul style="list-style-type: none">Presence of strong competitionPreference for benchmarked products among consumersThe overall cost of the formulated pudding.

Adapted from (Kolbina., 2015)

Ansoff Matrix

Growth is essential to running a business for profit and reviewing expansion; the Ansoff matrix may be a technique used for deliberate judgment regarding firm growth through product and market extension networks. Ansoff's matrix is one of the renowned frameworks for higher cognitive processes regarding growth. The expansion vectors square measure penetration, market development, development and diversification. Marketers employ this matrix; the World Health Organization dares to grow and gain a competitive advantage. Ansoff matrix offers strategic alternatives to accomplish these objectives. For the analysis of the Ansoff Matrix, a comparison was made between the marketly available pudding and the formulated pandan pudding. Figure 1 is the representation of the basic template for the Ansoff matrix. The marketly available mango pudding was considered for the existing products and markets. In contrast, for the new products and the new market, the formulated pandan pudding was compared as the formulated pandan pudding was compared. So, in this case, the main focus was new product development and diversification because the existing market and the product give an overall view of the market penetration and market development for the newly formulated pandan pudding.



Figure 1: Ansoff matrix

Adapted from (Yin., 2016)

Sensory Evaluation

In the study, 50 untrained panellists from the age group of 25 to 65 years old participated. A selection of students from UCSI and public people from Cheras, Kuala Lumpur, was called for sensory evaluation. The coded samples of the pandan pudding were arranged in random order and given to the panellists. Drinking water was offered to the panellists to cleanse their palates during the sample tasting. Panellists were instructed to consider the appearance, flavour, aroma, colour, and texture of the pandan pudding, and they were asked to score the overall acceptability of each sample on a 9- 9point Hedonic scale (1 = dislike immensely, 5 = neither like nor dislike, 9 = like significantly) based on these attributes. Each panellist evaluated four samples delivered.

Statistical Analysis

Once the data collection was completed, the results were analyzed using the Minitab 18 statistical software for Windows. The data obtained were expressed in terms of means \pm standard deviation of all formulated pandan pudding measurements. The results were analyzed using a one-way variance analysis (ANOVA), and Tukey's honest significant difference test (HSD) was conducted to determine the statistical difference among the groups. The considerable differences in analyses were indicated by $P < 0.05$.

Results and Discussion

Business Components

SWOT Analysis

a) Strength

As mentioned in the discussion earlier, pandan pudding showed a higher level of nutritious value than mango pudding. The formulated pandan pudding doesn't contain any preservatives. It is a low-sugar product with lots of health benefits. The product is available throughout the year. This product attracts older adults because of its quality and health, increasing the market size and income.

b) Weakness

The availability of raw material suppliers is limited as few ingredients are available in the local market. The price of the newly formulated pandan pudding is higher because the main ingredients cost is quite high.

c) Opportunity

Growing preference for pudding products is higher depending on the geographical location. There is a massive market for pudding in Asia soon, so if this product is introduced here, the chances of getting into the market will be higher. As per the statistics, the population

d) Threats

Currently, many industries produce pudding, and they dominate the market. So, it will be a challenge to get a position in the market. As people always prefer benchmarked products, they will have second thoughts about buying a new one from older people. This is an increasing trend, so this product will have a huge market demand in future. Formulated pudding When compared to the existing product's price, the formulated pandan pudding's price will be higher, so the purchasing power of the people would be low.

ANSOFF Matrix

a) Market Penetration

As represented in Figure 1, regarding geography, the market is segmented into Asia Pacific, Europe, Middle East and Africa, North America, and South America. The European region dominates the market, mainly Western European countries—the primary consumers are in France, Germany, and the UK. Asia Pacific region has a high growth rate regarding the jelly pudding market. Asia Pacific countries are having urbanisation, and increased disposable income has led the market to growth. The Asia Pacific is said to be the fastest-growing market. Fruit jelly pudding is dominating the market, as it is most commonly used. Fruit jelly pudding with strawberry flavour is widely used (Envision Intelligence, 2018). Current strategies followed by the companies are increasing the product's market share, analyzing the customer perspective, and determining its price.

b) Market development

In the developing region, demand for jelly pudding is increasing as the developing nations are improving regarding disposable income and standard of living, which is leading the path for the market. Growing urbanisation and health consciousness have allowed the market to grow. Demand for organic and natural products is the major driving factor for growth shortly. These factors opened the path for the market during the forecast period—focusing on the new geographical locations with high demand for the product (Envision Intelligence, 2018). This can be improvised by bringing in new retailer channels and distributors in that new location. As the product is new to the market, the pricing also plays a primary role in market development.

c) Product Development

The global elderly nutrition market was valued at US\$ 17,453.5 million in 2017 and is projected to exhibit a 6.6% over the forecast period (2018 – 2026), according to Coherent Market Insights (Khajezadej et al., 2019). Many opportunities are presented by the size of the senior market for the agri-food sector in developing food products with health benefits (Kozonova & Povarova, 2015). Older people require less energy from their food, which is one of the most significant differences between the nutritional needs of adults and those of older people. Protein needs increase as lean mass is lost and the metabolic rate decreases in healthy elderly. Especially for the frail and unhealthy elderly, optimal protein intake is of paramount interest. This is because medications may interfere with normal nutrition metabolism and requirements or lead to a loss of appetite. This can lead to illness and malnutrition without intervention. Marketing a food or beverage product specifically for older adults can be challenging because of their different nutritional needs (Asia Pacific Food Industry, 2018). Reduced appetites, a reduction in taste and smell acuity, and problems with chewing and swallowing would indicate a need for delicious products that appeal to the eye and have a good mouth feel. These jelly products satisfy the nutritional requirements of people. So, in pandan pudding, various functional ingredients such as soy protein isolate, soluble corn fibre, astaxanthin and monk fruit sweetener were added, increasing the pudding's nutrient level. As discussed earlier, the jelly pudding's format market is Asia the Pacific, and this product can be launched first in Thailand.

The increase in the cost of these ingredients and the availability of ingredients is a significant challenge, hindering the market. Increasing competition among manufacturers is an important restraint that reduces market growth (Kyriakopoulou et al., 2021).

d) Diversification

The market for pandan pudding showed that it has been more demographically and geographically segmented and targeted only at older people.

Sensory Evaluation

The sensory analysis combines experimental and statistical methods to evaluate food products using human senses (sight, taste, smell, touch, and hearing). To a great extent, it depends on the sensation of the assessors, which is associated with the psychological factors at that time. It is likely to make inferences about the quality of products under test by applying statistical methods to the results. The sensory testing environment is vital to analysts' perception because it more or less causes specific physiological sensations/ characteristics (Ruiz & Herrero, 2021).

In this study, I have focused on the age group from 25-65 years old. The reason for including the younger people in the analysis is because, as a family, there is a chance for them to consume the pudding as well. Moreover, younger people are the ones who take care of older adults. So, getting their opinion and ideas could also help improve the product. All the values are expressed as mean values \pm standard deviation with a significant difference of $P < 0.05$ (Tukey's test). In this study, concerning appearance, aroma, texture, colour, flavour, and overall acceptability, the sensory characteristics score of pandan pudding of control and the F2 containing soy protein isolate, soluble corn fibre, astaxanthin, and monk fruit sweetener was found to be the highest. Appearance is the most crucial factor that affects an edible product's acceptability. This showed the highest score when compared with the other characteristics (Ruiz & Herrero, 2021).

Based on all the characteristics of the pandan pudding, the panellist's overall acceptability was given to Control and F2 based on the graph. The panellists gave the highest score for control, which did not include soy protein isolate, soluble corn fibre, and monk fruit sweetener. Their preferences were based on the appearance (the softness of the pudding). The F1 also showed up to be the highest, equal to the control. In this aspect, the Soy protein isolate was good enough to achieve the exact gel properties. The least was observed among the samples of F1 and F3. The panellists felt F1 had texture and colour, which was not appealing enough. The F3 showed that the pandan pudding was not good enough in texture, flavour, and colour. The comments mentioned by the panellists were F3 has more flavour of soy protein isolate, which in turn affects the other characteristics. The soy protein isolate plays a significant role in the texture of the pudding and overall acceptability. Several processes occur while food is masticated, including deformation, flow, mixing and hydration with saliva, and sometimes changes in the food particles' temperature, size, shape, and surface roughness. All of these changes are recorded with great sensitivity by the human senses but are challenging to measure in many cases with instruments. The entire complex of events during mastication cannot be measured entirely by instruments (Singham et al., 2015).

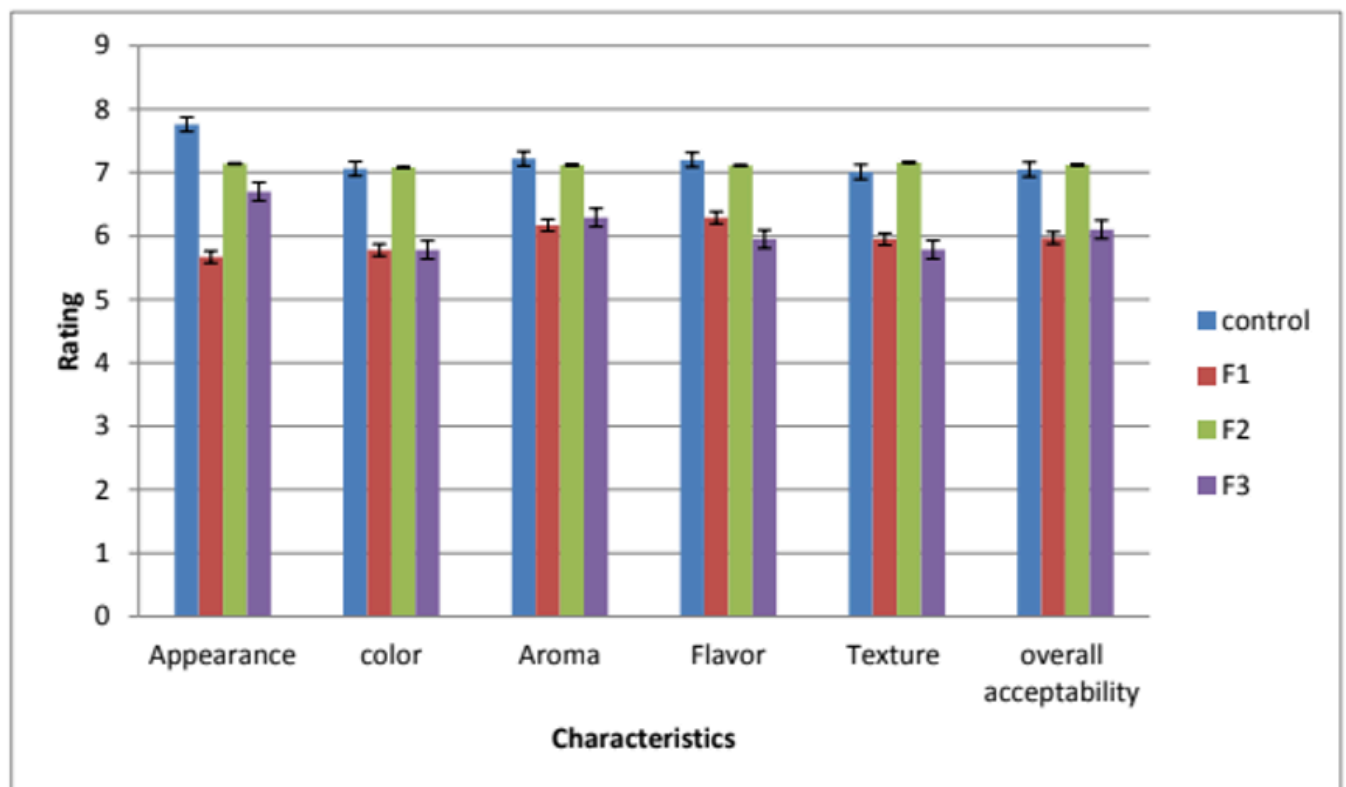


Figure 2: Sensory Evaluation of the Pandan Pudding

Control = Pandan pudding incorporated with 0% soy protein isolate and without soluble corn fibre and monk fruit sweetener

F1 = Pandan pudding with 4% soy protein isolate and monk fruit sweetener.

F2 = Pandan pudding with 6% soy protein isolate and monk fruit sweetener.

F3 = Pandan pudding with 8% soy protein isolate and monk fruit sweetener.

Conclusion

In conclusion, launching an innovative pandan pudding requires a well-rounded approach that blends sensory evaluation with strategic business planning. The sensory analysis provides critical insights into consumer preferences, allowing for product refinement based on taste, texture, aroma, and overall acceptability. At the same time, strategic frameworks like SWOT analysis and the Ansoff Matrix help identify market opportunities and challenges, ensuring that the product can successfully penetrate and grow in the market.

Through SWOT, companies can assess internal strengths like the pudding's nutritional benefits and external opportunities, such as rising demand for plant-based and healthy desserts. Meanwhile, the Ansoff Matrix provides clear pathways for growth, from market penetration to diversification, allowing companies to expand their reach by developing new products or entering new markets. From the sensory analysis, the panelists have given their opinion about the pandan pudding. The overall acceptability was quite good for all the formulations; the only comment given by most of the panellists were they experienced a hardness in the pudding. Furthermore, the survey was done with the panellists, and. They mentioned that if the product has been introduced in the market, there is a high chance of an increase in the purchase of this nutrient-dense pudding by elderly people. The suggestion given by the panellists was even if the cost of the pudding is higher, the elderly people can purchase it as it is a source of protein and fibre. And based on the SWOT analysis and ANSOFF Matrix there is a good opportunity for this formulated pudding in the market among the consumers as it can satisfy their daily nutritional requirements.

Combining these tools helps ensure that the pandan pudding meets consumer expectations and achieves sustainable growth in a competitive marketplace. Businesses can position their products for long-term success and market leadership by addressing potential weaknesses and leveraging identified strengths.

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Conflict of Interest

The authors declare no conflict of interest from preparation to publication of this manuscript.

Ethics Approval

This study has undergone ethical approval.

Participant Consent

It ensures that individuals voluntarily agree to participate in a study with a complete understanding of what it entails.

