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Techno-economic analysis of coconut cookies production during small project

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Abstract
This research focused on Techno-economic analysis of plain cookies and coconut cookies production. The market demand of cookies increases annually in India. The industry saw a number of product launches in the premium end of the market. National and regional players launched premium cookies with in an existing brand name. Britannia industries' launch of premium Good day fresh bake cookies is a good example. The main consumers of cookies are families especially in urban and semi-urban areas. Besides, hotels, restaurants, canteens, army establishments require cookies in significant quantities. Indian consumers are clearly moving towards premium cookies. This shows that cookies and sandwich biscuits will continue to perform well in future. These categories are expected to see more product launches over the forecast period.

Keywords: Coconut cookies, techno-economic, small project, break even point

Introduction
"Cookie" is chemically leavened product, also known as "biscuit". Generally the term biscuit is used in the European countries and cookies in the USA. They differ from other baked products like bread and cakes because of having low moisture content, ensure comparatively free from microbial spoilage and confer a long shelf life of the product (Wade, 1988) [7]. Cookies are ready to eat, convenient, inexpensive and one of the most popular and widely consumed processed food products in India. The total annual production of cookies both by the organized and unorganized sectors has been estimated to be around 10 lakh tones with an annual growth rate of about 5-7% for general variety and 20-40% for cream and fancy varieties (Alagh, 1990; Agarwal, 1994) [8, 6].
Wheat (*Triticum* spp.) is the second most important winter cereal in India after rice. Bread wheat contributes approximately 95% to total production while another 4% comes from durum wheat and Dicoccum sharein wheat production remains only1%. Wheat crop contributes substantially to the national food security by providing more than 50% of the calories to the people who mainly depend on it. India has witnessed a significant increase in total food grain production to the tune of 233.88 million tonnes with a major contribution of wheat with 80.58 million tonnes (34.5%) during 2008-09 (Singh, 2010) [9].
Coconut (*Cocos nucifera*) is popular in tropical regions, such as: South and Southeast Asia, Africa, Central America etc. Matured coconut endosperm is rich in lipid, protein and fiber (Sonia *et al.*, 2006) [1]. Recently, it has been extracted for manufacturing coconut milk (including concentrate and Powder products) and oil for food and cosmetic. Nevertheless, there is a large amount of residue waste from production of these products. This residue is rich in fiber, carbohydrate and protein. It is utilized for production of coconut flour. Some authors reported that coconut flour can be utilized as a substitutive material for wheat flour in bread (Gunathilake *et al*., 2009) [2], noodle (Abeyrathne and Gunathilake, 2008) [3]. Sridevi (2013) [4] reported that coconut flour could substitute for 25% of wheat flour in cookies. These reports implied that coconut flour could contribute to, not only treat celiac disease, but also enhance added value of coconut nut. Objective of this study was to produce value added product and identify business opportunity and market potential for cookies in local market.

Material and Methods
The project on production of 'Cookies' was carried out in Bakery Unit of College of Food Technology, Vasantrao Naik Marathwada Krashi Vidhyapith, Parbhani.

Materials

All-purpose wheat flour (Maida), Powdered sugar, Margarine (biskin), Baking powder, Baking soda, Butter, Full cream milk, Coconut powder was procured from local market of Parbhani. Meanwhile, production equipment used include Cake Mixer, Baking oven, Baking trays, Table, Steel containers, Weighing balance was made available by Bakery unit of College of Food Technology. These materials and equipment are needed for the production process in order to obtain data and assumptions that will be used in calculating economic feasibility. Recipe for coconut cookies is shown in Table 1 and Fig.1 shows baked coconut cookies.

This research used a descriptive analysis method. The descriptive method is a method of examining the status of a group of people, objects, and a set of conditions, a system of thought or a class of events in the present.

Fig 1: Coconut cookies

Recipe of cookies

In the study raw materials was taken in various quantity. Thus by taking total accountability of Raw Materials w.r.t. 1 Kg Refined Wheat Flour as the Standard Measure then the resultant output of our product i.e., Cookies is approximately 2 Kg with an average of 6% Baking Loss. Recipe 2 Kg of cookies is shown in Table 1 and flow chart for cookies displayed in Fig.1.

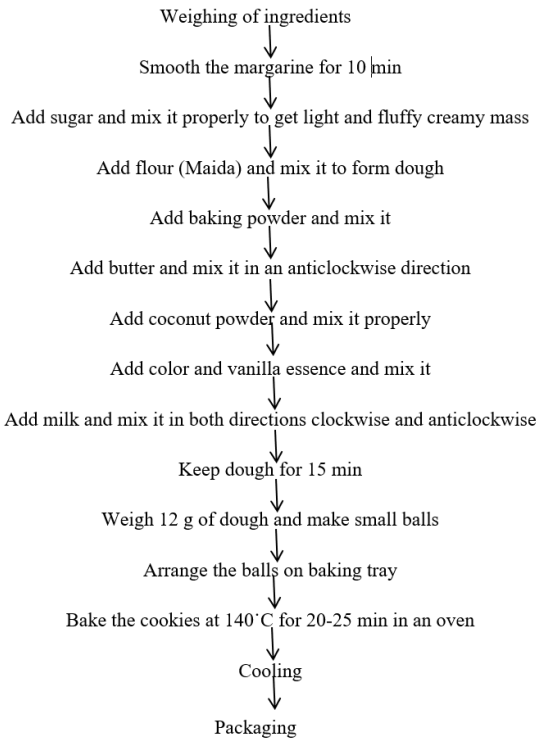

Table 1: Recipe for coconut cookies

Sr. no.	Ingredients	Quantities
1	Flour	1 Kg
2	Margarine	500 g
3	Sugar	500 g
4	Baking powder	15 g
5	Baking soda	10 g
6	Butter	50 g
7	Milk	50 g
8	Coconut powder	200 g
9	Vanilla essence	10-12 drops

Results and Discussion

The technical aspects relates to production input and output known as technical feasibility analysis. Input is the initial process or provision, while output is the result or final product. Raw material cost is given in Table 2 and shows total cost of raw material or input.

Coconut cookies were round in shape, light brown in color, smell like toasted coconut, and sweet in taste. The product is packed in low density polyethylene bags with each pack containing 7 to 8 cookies with 250g net weight.

Table 2: Raw material cost

Sr. No.	Particulars	Amount	Cost/Kg	Total Cost
1.	Refined wheat flour (Maida)	30kg	Rs. 25/kg	Rs. 750
2.	Granulated sugar	12.5 kg	Rs. 30/kg	Rs. 450
3.	Margarine	12.5 kg	Rs. 100/kg	Rs. 1500
4.	Butter	1.5 kg	Rs. 304/kg	Rs. 456
5.	Milk	1.5 kg	Rs. 36/kg	Rs. 54
6.	Baking soda	300 g	Rs. 60/kg	Rs. 18
7.	Baking powder	450 g	Rs. 60/kg	Rs. 27
8.	Vanilla essence	150 ml	Rs. 200/l	Rs. 30
9.	Dry Grated coconut	6 kg	Rs. 152/kg	Rs. 912
Total Amount		69.90 kg	Total cost	Rs. 4197

Calculations

Net cookies produced: 69.90 kg
Cost of raw materials required: Rs. 4197
Baking, Handling & Packaging loss 6% (kg): 4.194
Packaging @ 5% of cost of raw materials: Rs. 209.85
Utilities [Electricity, Machinery cost, Water & Labour]: Rs. 1049.25 (@ 15% Electricity charges + 10% MC, W &L of Raw materials)
Total Production cost for 69.90kg Cookies: Rs. 5456.10
Marketing price decided for 1 kg cookie: Rs. 160.00
Actual Marketing price of 69.90 kg cookies: Rs. 10512.96
Net Profit Earned = Actual Marketing Price – Total Production Cost
= 10512.96 – 5456.10
= 5056.86

Thus Net Profit earned is Rs. 5056.86

$$\text{Profit Percentage} = \frac{\text{Actual Marketing Price}}{\text{Total Production cost}} \times 100$$

$$\text{PP} = \frac{10512.96}{5456.10} \times 100$$

PP = 192.68%

$$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100$$

$$\text{NPR} = \frac{5056.86}{10512.96} \times 100$$

NPR= 48.10%

$$\text{Break Even Point} = \frac{\text{total cost}}{\text{selling price}}$$

$$\text{BEP} = \frac{5456.10}{160}$$

BEP= 34.1

Production and Marketing

Production of cookies was carried out in Bakery Unit of College of Food Technology under the guidance of our Professors and ELP Incharge. We started our product marketing from the college of Food Technology, VNMKV, Parbhani. We sold our product to students and teachers. Then we took our product to the local market of Parbhani, where we interacted with shopkeepers, retailers and direct with consumers. In the end of the project we were also required to display & sale our Products in an exhibition on September 17th 2013 where we interacted with the general people, farmers, entrepreneurs & qualified staff from the University as well as from other Universities & regions.

Conclusion

The report shows that project is feasible in terms of financial aspects. The Experiential Learning Program in my college proved to be of great help to me in terms of my overall personality development and got to know and learn many valuable things regarding Business Development & Entrepreneurship.

Acknowledgement

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