



VALUE ADDITION OF UNDERUTILISED FRUITS WITH A CONCEPTUAL MODEL FOR WOMEN EMPOWERMENT

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Abstract

Minor, traditional, neglected, new, alternative, lost, orphan, promising, underdeveloped fruits etc. are not so extensively cultivated, and their consumption and trade remain to be more limited. There are nearly 150 of consumable species of such minor fruits in India. Most of the minor fruits are enriched with nutritional and medicinal value, and can be grown even in wastelands without much care. There is always demand from consumers for new, delicious, nutritious and attractive food products. Various innovative products created from the underutilised fruits identified and represented in this study. Nutrient rich, innovative products can be possible from these economically cheaper fruits which are seasonal and naturally available. The availability of market and processing technology is trending now. Due to these unique characters and by using Enterprise architecture (EA) analysis a business model has been proposed through this paper to empower rural women. Secondary data was used for this study and the importance, compatibility of the e commerce in relation to the present context has been presented through this paper.

Key words : Underutilized fruits, value addition and empowerment of women.

Introduction

“Everything on the earth has a purpose, every disease an herb to cure it, and every person a mission. This is the Indian theory of existence” (Dove and Salish, 2010). Every plant and plant part have its own utility; unless we realise the value of that product they are underutilized. Through this paper an attempt was made to identify various underutilised fruits, their potential to prepare various products, demand and marketing of such products and process of preparation into various products. A hypothetical model for value addition of underutilised fruits was proposed and discussed in this paper for the purpose of women empowerment.

What are the underutilised fruits?

Underutilized species are defined in different ways such as minor, traditional, neglected, new, alternative, lost, orphan, promising, underdeveloped etc. Beside their importance for nutritional value and a source of income, diversity of these fruits also has a cultural and social value and contributes to the stability of ecosystems (Arora, 1998). Underutilized fruits are not so extensively cultivated, and their consumption and trade remain to be

more limited. However, many are of considerable economic importance in their respective regional markets (Anang and Chang, 1999). Minor fruits are characterized by the fact that (i) they are locally abundant, but restricted in their geographical dispersion with a high use value, (ii) they are widely adaptable to agro-ecological niches/marginal areas, (iii) it lacks scientific knowledge about them, and (iv) their current use is limited relative to their economic potential. Some negative aspects of these crops are also recorded like poor documentation (particularly on their distribution, biology, cultivation needs, uses etc.), almost nonexistent or poorly organized marketing system (production-touse chain), relying on Indigenous Knowledge which receives little attention in institutional policies, R&D etc. (Roy, 2014). In India, about 27% of the fruit production consists of a large number of minor fruits. There are nearly 150 of consumable species of minor fruits in India (Majumder, 2004). Peter (2007) observed that cultivation of these fruits on a commercial scale is not yet attempted. A few common under-utilized fruits have been taken into consideration for this study with the following specific objectives such as; to identify potential under-utilized fruits, to analyse the e marketing system suitability for marketing of value added products

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from underutilized fruits and to suggest a hypothetical model to create a value added product from underutilized fruits for women empowerment.

Why to consider these underutilised fruits for women empowerment

Based on the locality these fruits are mostly available from undomesticated areas like forests. Most of them are freely available to the consumers or they are comparatively very cheap in price to use as raw material. Because of their unmerited characters like astringent taste, form, texture etc. They usually don't have good market value. When we need to consider women as a consumer, our technology must be economically very feasible, less technical dimension to get more conception. Women can easily access these raw materials at cost effective and easily apply the technology to create innovative products to sell them as demanded for better prices we can consider these underutilised fruits for women empowerment. Besides of this cost effectiveness and simple technology for women.

Uniqueness of women as an entrepreneur

Women contribute around half of the total world population and play a vital role in the farm activities and household management. They contribute substantially in the physical aspect of farming, livestock management, postharvest and allied activities. Their direct and indirect contribution at the farm and home level along with livestock management operations has not only helped to save purchased labour cost but also led to an increase in family income. Research data showed that around 43% of the agricultural labour force of developing countries is composed of women; only 29 percent of women economically active in India, Agriculture sector employs 4/5th of all economically active women in the country. 48% of India's self-employed farmers are women (Swamikannan and Jeyalakshmi, 2015).

Usually women role is invasive from the farm production but in our patriarchal society women were identified as deprived and economically weaker. They often deprived from decision making process due to lack of independent income source in hand. Due to lack of training, their potential is getting neglected and only treated as farm labour. In Indian context most of the women don't have assets at their own; due to lack of collateral security they are unable to get the bank loans. Most of the farm technologies are not women friendly. Recently the importance of the women in the development is gradually recognised and gaining importance by researchers and policy makers. The third Millennium development goals is directly meant for women equality,

ICAR has its research station named Central institute for Women in Agriculture at Bhubaneswar to produce technologies as women as consumers. Central and state governments are supporting entrepreneurship of women through various empowerment schemes. Krishi vignyan Kendras (KVKs) and NGOs are providing vocational training through these agricultural/rural technologies to empower rural people. The entrepreneurship is the building blocks of economic development of the country. Not only that, through this entrepreneurship woman can be empowered and can challenge against any kind of discrimination. The conceptual model proposed through this paper is best fits at women as consumer technology and supports women empowerment. Entrepreneurship development among rural women not only increase national productivity and generates employment but also helps to develop economic independence and personal and social upliftment (Chatterjee and Das, 2017)

Materials and Methods

This paper is analytical in nature. Secondary data and earlier research results of present context was used. Enterprise Architecture (EA) Analysis was used to portray the concept *i.e.*, a small business venture based on value addition of underutilized fruits for SHGs to women empowerment.

Research Findings and Discussion

On observation from various research publications, the list of products from various underutilized fruits is identified (table 1). These products were so far developed from the fruits still there is lot of scope to identify and create more innovative products yet.

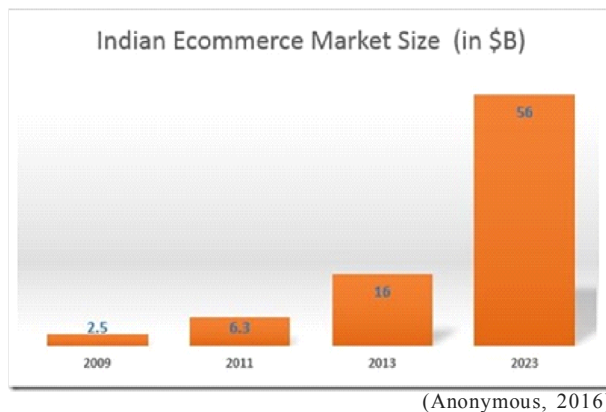
Demand and marketing

For any enterprise, good marketing of their products at better prices is very much essential. Unless getting profit the whole process of entrepreneurship development will get shattered. Internet marketing offers small businesses an affordable and efficient mode of advertising. This is the web era and as we may have noticed that there have been a rising number of populations browsing internet on a daily basis. Therefore, internet marketing automatically becomes a great tool to market your business on web. Digital marketing is growing with a rapid pace not only in India, but throughout the world as well. While all other Industry are struggling with a growth rate of 5-10%, Digital marketing industry is booming high and already achieved growth rate of 30% last year and estimated growth for year 2016 is 40% and the most important part is that growth rate is not going to be stagnant in coming years. As the internet users are

Table 1 : Few examples of the products developed from underutilized fruits so far.

S. no.	Name of the fruit	Products made
1.	Tamarind	Jam, jelly, Candy, beverage, chutney, sauce, pickle, frozen puree,
2.	Aonla	Jam, preserve, candy, glazed fruit, juice, chutney, pickle, canned product
3.	Pumpkin	De hydrated pumpkin, powder for cracker dough
4.	Jamun	Jam, jelly, juice/squash, canned product, ice cream
5.	Jack fruit	Ice cream, jack fruit chips,
6.	Bael	De hydration, frozen puree, juice, preserve, jam
7.	Ber	Jam, preserve, candy, glazed fruit, juice, wine, pickle
8.	Custard apple	Jam, ice cream, de hydration, frozen puree
9.	Mulberry	Juice, jam
10.	Wood apple	Jelly, jam, fruit bar

increasing day by day ecommerce industry is also on a booming path. User engagement over social networks and internet penetration rate has given a clear signal that online presence is not only necessary, but it is must for all the business, who want to grow in new era (graph 1).

**Graph 1 :**

We can see the products from these underutilised fruits (like tamarind candies are selling around 100.00 rupees per 100 Grams) are being sold in very good price at popular e-commerce giants. We can witness products from aonla, palmera, jack fruits etc in the very popular e-commerce sites like ebay, amazon etc. It shows the accessibility of the market to the small industries and the

price of such products reveals the demand of them among the people. So, there is a good potential for more innovative products to produce and empower through small scale entrepreneurship. Through this experience we can say the marketing will not be a constraint for the products now a day, because of this online marketing. There is no requirement for establishing a vending outlets etc. The growth and development of e-commerce companies, better accessibility of 3G and 4G Internet network, the need to have better standard of living, availability of wider range of products on the online platforms, busy lifestyle of the middle class, increased disposable income coupled with a rise in consumerism, are some of the major driving forces which have given impetus to the consumer technology in India and have revolutionized the concept marketplace from traditional “bazaars” to “online platforms”. Micro, small and medium enterprises (MSMEs) are widely regarded as the cornerstones of the Indian economy contributing significantly to the industrial, economic, technological and regional development. According to the Ministry of MSME, the sector has grown at a consistent pace of 4.5% in the last five years.

The existing FDI Policy effective from May 12, 2015 requires single/multi brand retail traders to source at least 30% of the value of the goods (i) in case single brand retail trading, from India, preferably through MSMEs, village and cottage industries, artisans and craftsman, and (ii) in case of multi brand retail trading, from Indian MSMEs, which have a total investment in plant and machinery not exceeding \$2 million. Thus, while certain single/multi brand retail traders may find it onerous to comply with the Sourcing Requirement, this condition not only enables MSMEs to scale-up production and operations, generate employment, but also provide increasing opportunities at an international level, access to state-of-the-art technologies, leading to the manifestation of global managerial practices and opportunities for integration into global markets for the MSMEs (Poorvi and Mehta, 2016).

Natural ice cream from low cost ice cream freezer for women empowerment: a conceptual model proposed based on Enterprise architecture analysis

Enterprise Architecture Analysis (EAA) is all of the procedures that transform architectural data into useful information, which serves as the basis for bringing a concept. EA analysis is more than a static process with a collection of techniques, it has been adopted to collect and connect different dots from various domains. Finally an enterprise model has been developed to empower women as self help groups by value addition of various

underutilised fruits like jackfruit, jamun, custard apple, etc. usually ice cream freezers are costly enough to purchase and utilise for profitable ventures by poor and rural women. For this situation; women as a consumer technology has been developed and patented by ANGRAU by Prof. Dr. Vijaya Khedar (fig. 1).



Fig. 1 : Low cost ice cream freezer by Prof. Dr. Vijaya Khedar.

This low cost ice cream freezer is very less in cost (6000.00 INR during early 2000) in comparison to commercial model (usually in lakh of rupees). From this invention, natural ice creams (highly demanded now a day) can be prepared. Because there is no much different procedure to prepare them in comparison to regular ice cream. Addition of 20% natural pulp can be added to the ice cream mix than simply addition of flavour, where normal ice creams usually prepared. But in commercial form, adding of fruit pulp to the ice cream mix is turns very costly for preparation. But for rural women these jack fruits, custard apple, jamun like fruits easily accessible at cheaper price. The demand of this product made its price as high as fifty rupees per scoop in present situation. The capacity of production technology, raw material availability, cost effective technology, high demanded for the product in the market, ease in the market can make the factors for success of this venture. Besides this technology another ice cream preparation method using Stevia as a sweetener has been proposed by Yogiraju *et al.* (2014). According to him Ice-cream with 2.25 per cent stevia powder had highest overall acceptability *i.e.*, which contains protein 2.96 per cent.

Conclusion

Most of the minor fruits are enriched with nutritional and medicinal value and can be grown even in wastelands without much care. Therefore, it is worthwhile to look into the organized cultivation and improvement of minor group of crops like aonla, pumpkin, wood apple, bael etc. so that their utilization can be maximized. These underutilised fruit crops are seasonal in nature if

completely dependent on them can cause input constraint. Hence research organizations must concentrate on these crops to develop production even during off seasons. There is always demand from consumers for new, delicious, nutritious and attractive food products. To satisfy this demand, there is a constant effort to develop products from diverse sources. The nutrient rich fruits, economically cheaper fruits must have a good treatment to make innovations to treat malnutrition in the country. The potentiality of processed products from some minor fruits in the country is still untapped. This paper has attempted to show the feasibility for the development of some diversified value added products from some of the minor fruit crops grown in India in order to facilitate women empowerment. The existing ICAR research institutes and SAUs can through more light on this underutilized fruits to make profitable innovations. Most of such technologies fit for women SHGs, since women empowerment has prime importance to make women challenge against any sort of discrimination in the society.

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