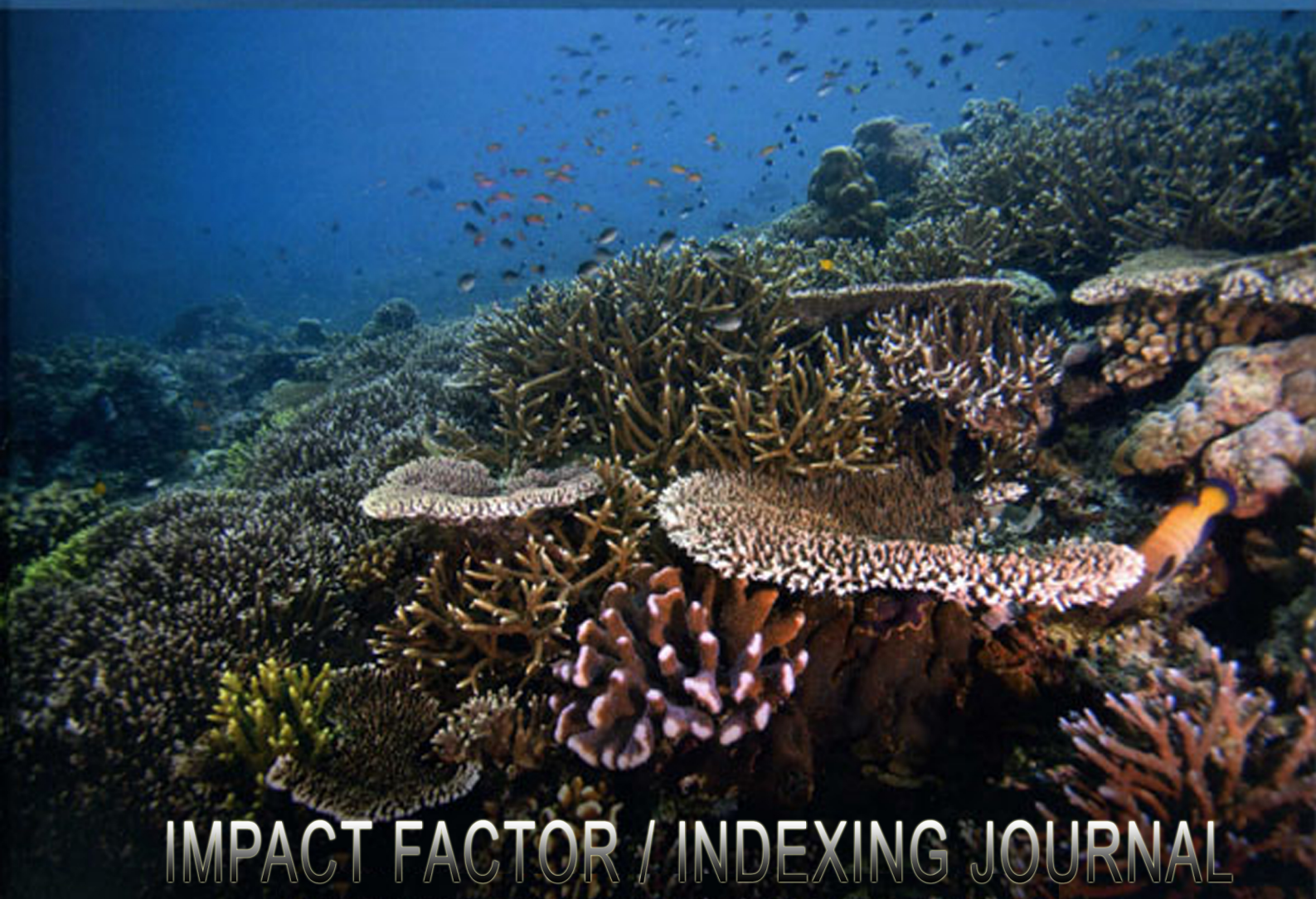


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**EFFECTIVE BACKWARD AND FORWARD LINKAGES FOR OPTIMAL USE OF LOCAL RESOURCES
AND CREATION OF SUSTAINABLE LIVELIHOODS: A CASE IN CHALLAMPATTI BLOCK,
TAMIL NADU, INDIA**

***Dr. R. Chinnadurai**

Centre for Planning, Monitoring and Evaluation, National Institute of Rural Development, Rajendranagar,
Hyderabad

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ABSTRACT

Developing or producing of a new product would be an easy task but finding sustainable market would be the major problem for small producers or budding entrepreneurs, failing which lead to defunct or closure of industrial unit. In order to avoid much market dependency of industrial units an innovative attempt has been made in this paper based on a field based work. This paper mainly based on the regional resource based planning for employment generation for local unemployed simultaneously trying to fulfill the local consumer needs. For the purpose, a study was undertaken in a cluster of villages to identify the regions potential resources and opportunities. This research paper made an attempt to find out suitable strategies and measures for optimum utilization of locally available resources and suggests appropriate location of micro production and service units through input and output linkages called 'Input-Output linear linkages strategy'. The objectives of proposed model are, to link the production interrelated activities, to explore the cost effective means of production, to find relief from market dependency, to save various costs involved in transportation and ultimately aims towards optimum utilization of locally available resources for employment generation. This paper has been divided into two parts, the first part deals with the background of proposed strategy and the second part deals about the technical features like cost saving and employment potential possibilities, etc.

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INTRODUCTION

This research paper made an attempt to find out suitable strategies and measures for optimum utilization of locally available resources and suggests appropriate location of micro production and service units through input and output linkages. A study was undertaken in a cluster of villages to identify the regions potential resources and opportunities. Based on the resources available local region, a few small industrial and processing units were identified and suggested an input-output leaner linkage model. The study was conducted in Chellampatti block located in Madurai district, Tamilnadu, India. It focuses on finding appropriate ways and means to use output of one unit as input for other units with the motto of optimization of profit and reducing risk of marketing of final products.

***Corresponding author: Dr. R. Chinnadurai**
Centre for Planning, Monitoring and Evaluation, National Institute of
Rural Development, Rajendranagar, Hyderabad

Background

The process of globalisation and industrial policy liberalization in India ushered industrial development from 1990 onwards through introduction or imparting innovative and advanced production technologies or allowing MNCs to invest in India. It brought commendable changes with increase in the GDP and GNP and achieved higher rate of economic growth in general and made to compete in the international trade to sustain in the global market. It can be proud to say that, over a period of time India has attained considerable success in the area of industrialization and technology transformation. Imitation of western consumerist culture has predominantly contributed for the growth of consumer oriented industries. Then onwards India has been encouraging establishment of consumer goods industries and supporting infrastructures by opening adequate credit network. Last three decades efforts on industrial liberalization encouraged multinational companies and monopoly producer's

concentration on enlarging their horizons in producing all type commodities even the item reserved for small, cottage and tiny industries. The MNCs have been making herculean task on covering rural consumers in their cob-web. The consequences of penetration of MNCs and giant industrialists made irrevocable negative effect and impact on the small scale and tiny industries especially in the rural areas. In the race of industrialization small-scale, micro industrial units and artisan activities are facing number of problems in distribution and sale of their products due to mounting competitions from multi-national companies as well as local corporate sectors. Finding and developing of a new product would be an easy task but finding sustainable market would be the major problem for small producers, failing which lead to defunct or closure of unit. Establishment of industrial estates and Special Economic Zones (SEZs) are welcoming efforts of economic development but again urban industrialists and high-tech entrepreneurs are the predominant beneficiaries of these developments. Creation of Rural Economic Zones to facilitate rural entrepreneurs who come forward to start production units by utilizing locally available resources and also potential man power and to fulfilling of local needs is an important area of concern. Finding a suitable ways and means for protection and encouraging rural entrepreneurs for easy disposal of their products will be an important task ahead for the government. Suitable strategy for disposal of final goods and services with less efforts and by saving cost of transporting of raw materials as well as finished goods will be much helpful for poor individual entrepreneurs.

Industrialization in India is having long history of development, but only less endeavor of research on the minimization of marketing efforts was attempted. In this line, an attempt was made to develop theoretical strategy to apply input and output model with focus on mutual sharing of one unit's output and services as input to other units in this paper. It is a suggestive model based on the resources available in a particular region of Tamil Nadu. The objectives of proposed model are, to explore the cost effective means of production, to find relief from certain marketing risks, to save various costs involved in transportation and ultimately aims towards optimum utilization of locally available resources. Input and output approach is a strategy, which aimed to create backward and forward linkages, try to find out possibilities of cost of production, cost of transportation, incidental expenditure incur in purchasing of raw materials, avoiding risk in repairing and maintenance services and finally it aims to easy disposal of finished products of the final units. Final and semi finished products or wastages of one industry are transmitted to other industry/ies to use as raw materials. This strategy works with a series of systematic mutual linkages among selected interrelated entrepreneurial activities in a geographical region.

Importance of Backward and Forward Linkages Approach

Most of the cottage industries in rural areas are located in a scattered way without considering availability of various factors of production. Further, both public as well as private enterprises are located without any mutual understanding among or between them even though they are in the same field of production. Moreover, industries are preferred to locate around the cities without considering the base of raw material

availability or infrastructures. Making initiatives like purchasing and transportation of raw materials, repairing and maintenance of machineries, etc by every individual units results in significant quantum of men, materials and money resources during the production process. Industries located in the cities mainly depending on rural areas for their raw materials and labourers. Resources from villages are moved on compulsion to cities for process or value addition and come back to villages for marketing. In spite of the ownership of resources, rural people are not getting much benefit over their resources but left with problems like unemployment, poverty, backwardness, migration, etc.

Pattern of Present Industrial Location and Services Requirement

The figure - 1 show that, how each and every industry is involving in various production related functions and services individually through separate mechanism which incurs huge expenses leading to high product cost. An industrial unit has to do huge base work on approaching for raw materials, purchasing, transporting and supply of materials and services. More wastage of resources in terms of time, money, material and energy has to be incurred on each and every activity.

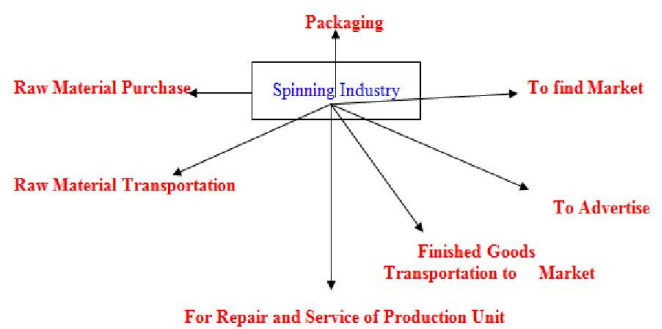


Figure 1. Illustration of present pattern of diversified services requirements for a spinning unit

Regional planning has got greater importance recently after the proclamation of democratic decentralisation in India i.e. planning at the grass root level through a constitutional amendment. Considering the view, creation of employment to local people by optimum utilization of locally available resources by establishing a chain of activities in a cluster of villages will impart fruitful effects on poverty reduction. To try to address these issues an attempt has been made in paper based on the available resources in Chellampatti block of Madurai District, Tamilnadu, India. Detailed discussions about the process of suggested approach has been presented in the subsequent sections.

Resources in the study region (Chellampatty block)

In order to understand the resource potential of the region, a resource inventory was carried out to verify the viability of establishing a chain of entrepreneurial activities focusing on at one place or with accessible distances aimed to accrual of maximum benefits to the local residents. Chellampatty block is located in Usilampatti taluk of Madurai District, Tamilnadu. It is one of the most backward taluk in the district but having more agro-industrial production potential. Agriculture is the major occupation for the majority of the families in this

region. Due to non-availability of industries in this region, local resources are move outside for processing and further value addition. It is noticed that, a number of finished products are coming in to the villages from neighboring towns to fulfill the consumer needs. The survey resulted that, one of the major reasons for the problem of poverty and unemployment in this region is non-availability of major or minor industries. More than 80 per cent of people in this region are depending on agriculture for their livelihood. During the lean season, majority of the people are becoming unemployed, many families are migrating to neighboring states for search of employment.

The details regarding type of resources available were collected, cropping pattern for past ten years were also studied to know the changes in cropping pattern. The major resources grown in larger quantity constantly were selected for considering for entrepreneurial activity. As per the field survey the following resources selected in this linear model.

Agricultural Resources: Cotton, Groundnut, Gingerly, Sugarcane, Green gram, Red gram, Black gram, red and green Chilly, Paddy, Bajra, Maize, fruits like Guava, Tomato, Mango and Coconut.

Physical Resources: Availability of larger Percolation ponds with water (seasonally), Soil suitable for bricks, Granites and Grassing land.

Human Resources: Skilled persons in confectionery items manufacturing, Skilled persons in brick work.

Apart from the above said resources, a number of other resources are also available but their quantity is not adequate for the industrial production. Therefore only above said resources are considered for industrial planning.

Activities Selected for Entrepreneurship

This approach is not only aiming to utilise the local physical resources but also intended to make use of skilled and semi-skilled manpower of the region. The proposed entrepreneurial activities are listed below

1.Cotton Ginning, 2.Cotton Spinning, 3.Weaving, 4.Tailoring, 5.Animal feeds Products, 6.Dairy & Products, 7.Confectionery, 8.Bakery, 9.Paddy dehusking and Agro-products process, 10.Spices powder manufacturing, 11.Bio-fertilizers, 12.Bio-Pesticides, 13.Oil Industry, 14.Washing soap manufacturing, 15.Preparation of Quash, Jam & Pickles, 16.Quarry Works (stone cutting), 17.Bricks & Building materials, 18.Servicing and repairing, 19.Packaging service and 20.Market emporium. The unique feature in this approach is, the final product of one industrial unit will be absorbed as raw material in another unit.

Process of Backward and Forward linkages Approach

In this approach locally available resources are absorbed by selected suitable micro industries to production of products or processing, considering local people's needs satisfaction. The unique feature in this approach is, the final product of one industrial unit will be absorbed as raw material in another unit.

For example, cotton is one of the resources available plenty in the study region, it is used as raw material for ginning industry, its output will serve as raw material to spinning unit, the output of spinning industry serves as raw material to weaving, tailoring and Readymade Garment unit. The final product of ready-made garment only goes to the market for sales. Paddy straw and other agriculture wastes which are suitable for converting as animal feed can be used in the animal feed unit, its final product will be supplied to milk dairy unit, in turn will go to confectionary unit and also milk products will go to bakery unit, the end product will reach the market emporium. The next resource base is agricultural products, based on these products many agro processing units can be planned but in this approach only paddy and other millets processing units have been suggested, the products of paddy de-husking and millet processing units will go to species powder manufacturing unit as raw material and finally will go to market. The next chain of activities is developed based on the oil seeds available in this region. The oil seeds like Gingely, Castor seed, Coconut, Groundnut and also Neem seed are grown abundantly. These produces are sent to faraway places for their process or value addition. The proposed strategy suggested for establishment of oil industries of different types to fulfill the people's needs and serve as link industry to agro fertilizer and pesticide manufacturing units, also to the washing and bath soap manufacture units. The fruits like mango, guava and tomato can be converted as pulp and supply to the beverages units and also can be used in the pickles and fruit processing industry. The market is one of the service activities in this approach. One common infrastructure, packaging and other services and transport facilities for all the units are included in this model. The physical resources like white and black rocks available in this region has potential to generate employment opportunities to many people, if regulated Quarry units are established, many people are able to get employment. Brick industry is a highly demanding commercial venture in this region due to availability of suitable quality soil to make 'country bricks' which is an important component of construction industry.

Estimated Cost Saving in the Proposed Approach

One of the objectives of this suggestive model is to find out approximate cost saving from the all proposed industrial units. An individual industrial unit has to look after all the forward and backward linkages like searching and procurement of raw materials, transportation of raw materials to the unit location, time and manpower cost etc. Post production activities like packaging, where housing, transporting of finished products to the market and efforts on marketing will take considerable amount of money. These efforts of expenditure incur on pre and post production activities, can be reduced at certain extent through the present 'closed end' production chain. The cost estimation in this strategy is calculated with the discussion form the industrial experts, it will give an idea to work further to development an appropriate model based on the conditions prevailing in a region's price structure and varies based on many factors. The following equations explain the approximate cost saving during raw materials purchasing, transporting of raw materials, transporting of finished products, packaging and services, etc, pertaining to the activities selected in this approach.

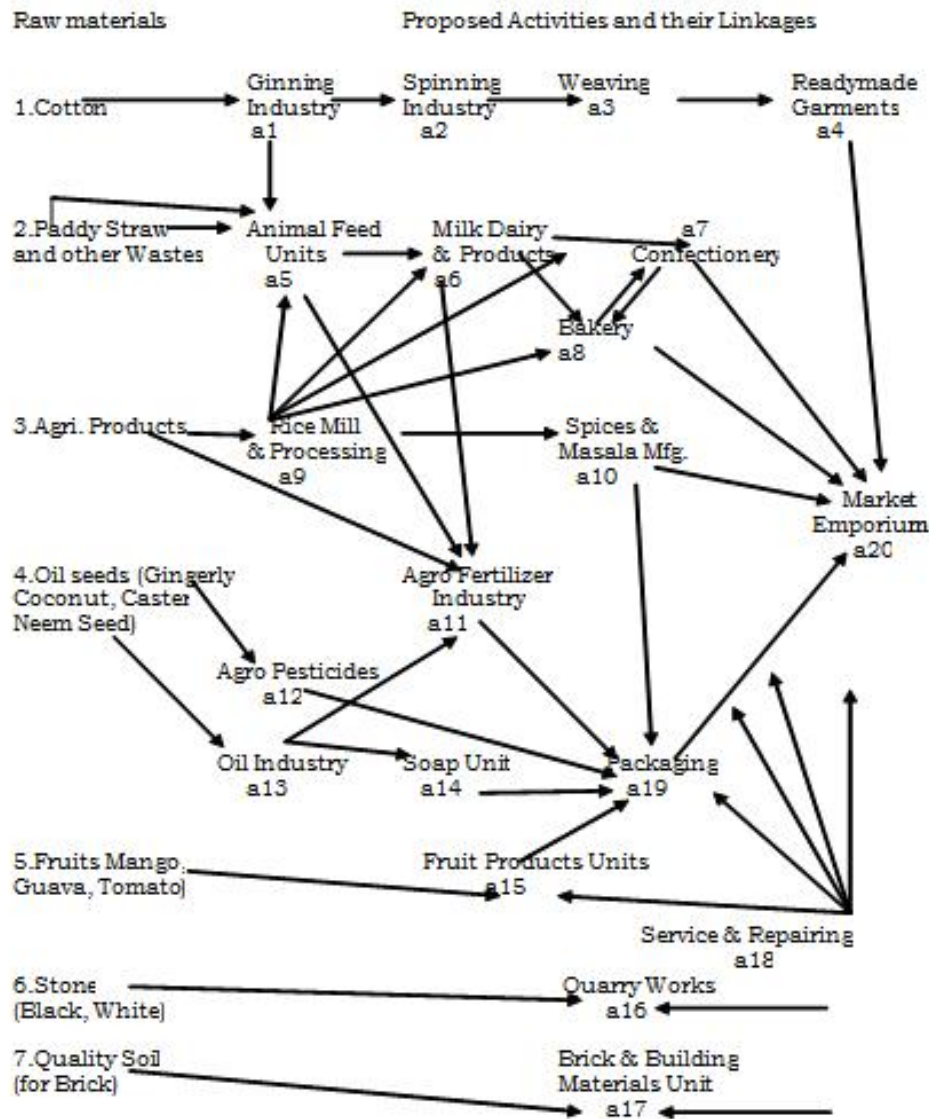


Figure 2. Proposed Input-Output Model of Entrepreneurial Activities

Method of Estimation of Cost Saving

$$TRa1 + TRa2 + TRa3 + TRa4 + \dots TRan \quad (1)$$

$$Tma1 + Tma2 + Tma3 + Tma4 + \dots Tman \quad (2)$$

$$Ra1 + Ra2 + Ra3 + TRa4 + \dots Ran \quad (3)$$

$$Ea1 + Ea2 + Ea3 + Ea4 + \dots Ean \quad (4)$$

$$Ma1 + Ma2 + Ma3 + Ma4 + \dots Man \quad (5)$$

$$Oa1 + Oa2 + Oa3 + Oa4 + \dots Oan \quad (6)$$

$$\text{Total Saving (TS)} = \Sigma TRan + \Sigma TMan + \Sigma Ran + \Sigma Man + \Sigma Ean + \Sigma Oa \quad (7)$$

Where as

TR - The cost involved for transporting of goods or raw materials from its origin to the industry

Tm - The cost incurred for transporting of finished products from industry to market

R - The cost involved during the raw material purchasing

M - The cost involved in marketing of products

E - Total cost involved in establishments in market emporium and in advertisements

O- Other expenditures incurred like intermediaries commission, whole sellers, retail sellers profit, the value of risk and uncertainty during marketing and loss etc.

a - Activity

n - Number of activities

Σ - Adding sum of each activity

The approximate cost saving in various activities through the application of this method has shown in the table below.

Figure -2 explains the various raw material based production chain links. Arrow marks represent output of preceding unit and marks towards raw material for succeeding activity. The a1, a2, a3...a20 will represent the activity -1, activity - 2 and so on. An important barrier in this model is, total production of one industry cannot be absorbed as raw material to another industry, production surplus have to be sent to market for sale. Only part of output can be used in this model but in view of generation of employment to unemployed people, this approach has importance, finding further linkages will yield better results.

Table 1. Approximate cost saving in Backward and Forward Linkages Approach

S.No	Name of the activity	(one business cycle) Amount in Indian Rs 000					
		TRa	TMa	Ra	Ma	Ea	Oa
1	Ginning	80	15	10	10	20	15
2	Spinning	80	15	10	20	15	15
3	Weaving	80	15	10	20	20	15
4	Tailoring & garments	50	5	5	25	20	15
5	Animal feeds	25	15	10	15	20	15
6	Dairy & Products	25	15	6	10	15	15
7	Confectionery	5	10	6	10	10	20
8	Bakery	6	10	7	10	10	10
9	Rice mill & agro	20	15	6	15	10	15
10	Spices & masala	15	10	4	10	10	15
11	Farm fertilizer	15	15	10	10	10	10
12	Pesticides	10	10	10	15	15	10
13	Oil industry	10	5	8	10	15	20
14	Washing soap	5	5	6	10	15	25
15	Quash, Jam &	10	10	6	10	10	25
16	Quarry works	30	30	2	5	5	10
17	Building materials	30	30	2	3	5	10
18	Service and repairing	3	0	1	0	3	5
19	Packaging	3	5	2	6	6	5
20	Market emporium	0	5	0	5	10	5
	Total	ΣTRa=502	ΣTMa= 240	ΣRa= 121	ΣMa=219	ΣEa= 244	ΣOa=275

The total cost saving in one production cycle are as follows

$$\begin{aligned}
 TRa1 + TRa2 + TRa3 + TRa4 + \dots + TRa20 &= \text{Rs. } 5,02,000 \\
 Tma1 + Tma2 + Tma3 + Tma4 + \dots + Tma20 &= \text{Rs. } 2,40,000 \\
 Ra1 + Ra2 + Ra3 + Ra4 + \dots + Ra20 &= \text{Rs. } 1,21,000 \\
 Ma1 + Ma2 + Ma3 + Ma4 + \dots + Ma20 &= \text{Rs. } 2,19,000 \\
 EAa1 + EAa2 + EAa3 + EAa4 + \dots + EAa20 &= \text{Rs. } 2,44,000 \\
 Oa1 + Oa2 + Oa3 + Oa4 + \dots + Oa20 &= \text{Rs. } 2,75,000 \\
 \Sigma TRa + \Sigma Tma + \Sigma Ra + \Sigma Ma + \Sigma EAa + \Sigma Oa &= \text{Rs. } 16,01,000
 \end{aligned}$$

Table 2. Employment Creation Through the present Plan

Activity	Name of the Industry	Employment Creation Possibility (in Mandays)		
		Direct permanent	Direct temporary	Indirect
a1	Ginning	10	1000	100
a2	Spinning	100	5000	100
a3	Weaving	25	1000	50
a4	Readymade Garments	15	100	100
a5	Animal feeds	12	150	50
a6	Dairy & Products	25	200	100
a7	Confectionery	20	200	200
a8	Rice mill & agri product processing	7		250
a9	Spices & masala	10	300	100
a10	Bakery	5	200	150
a11	Fertilizer	15	200	100
a12	Pesticides	20	300	50
a13	Oil Industry	10	100	100
a14	Washing Soap	10	100	200
a15	Quash and jam	10	200	200
a16	Quarry Works	25	500	200
a17	Building materials	25	1000	100
a18	Service & repairing	5	501	Nil
a19	Packaging	10	100	Nil
a20	Market emporium	10	200	Nil
	Total	369	11350	2150

The proposed strategy is having the saving possibility of Rs. 160, 000 from all 20 activities selected in this model in one production cycle. This amount may be less but in a year huge

amount can be saved if planned properly. Risk and uncertainty will be reduced at greater extent without doubt. The table 2 describes the possibilities of employment generation through this strategy. It can generate direct permanent employment to 369 persons including both skilled and unskilled persons, also 11350 man days of direct temporary jobs and indirect employment to 2150 man days jobs. The direct permanent and indirect temporary employment are possible through the establishment of units, mobilizing raw materials, transportation and other related activities of proposed industries. Temporary employment is estimated on the basis of man days of work per day. Further this plan will induce the agriculture sector and motivate the farmers to do profitable agriculture.

Conclusion

In this article, the author has given emphasis on linking of various industrial units with a motto of optimum use of resources through chain of linked production and processing units with prime importance to regional resource base. Author took efforts to workout methods to reduce the cost involved in various activities of the units mentioned in this strategy (plan). Finally he estimated the approximate cost saving and the possible number of employment creation by optimum utilization of locally available resources in the region. This strategy can be applied to anywhere in the country by considering the suitable conditions, resource potential, skilled labour and climate. The important draw back in the strategy is if any changes in resources flow pattern or in the case of resource exhaust will affect the system of linkages. Therefore care should be taken during planning and implementation such model.

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