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Special Reference to Handicraft and Cottage Industry in Odisha

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Abstract

Any country's environmental problems are related to the level of its economic development, the availability of natural resources and the lifestyle of its population. In India, the rapid growth of population, poverty, urbanization, industrialization and several related factors are responsible for the rapid degradation of the environment. Environmental problems have become serious in many parts of the country, and hence cannot be ignored. 80% of the total population of Odisha, a state of Eastern India depends on agriculture. But most of them are small and marginal farmers. 48% farmer's households are indebted. The state, in reality, is the second poorest state in India today, next only to Bihar. Industrialization is the only alternative to develop the economic status of the state but the darker side of it is environmental pollution. Hence if the growth of industry can be accelerated along with environmental protection then a balance can be maintained. So this paper examines the growth of cottage industries in the state of Odisha through different statistical analysis as this is an eco-friendly industry and simultaneously a prospective area for the growth of indigenous talent.

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1. Introduction

In Odisha, 80% of the total population depends on agriculture. But most of them are small and marginal farmers and 48% of farmers' households are indebted. Odisha has rich mineral resources, a coastline, and for tourists, there are places of historical value, a rich heritage, mangrove forests, deep jungles. But not really been able to exploit the resources it has and remained one of the backward states of India. Arnold & Towson (1994), according to Economic Survey report for the year 2013-14, tabled in the Parliament by the Union Finance minister Arun Jaitley, the state is, in reality, the second poorest state in India today, next only to Bihar. So many people from Odisha migrate to other states for livelihood.

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In 2013-14, the Gross State Domestic Product (GSDP) growth rate dropped to 2.21%.This slowdown caused a negative growth of 9.78% in the agricultural sector and also affected several other sectors. So today, Odisha stands at a Crossroad. It cannot completely depend on agriculture as this sector is in a declining trend. Industrialization is the only alternative which can foster economic growth as employment can be generated through it. But the darker side of industrialization is environmental pollution which is the biggest concern of present time, worldwide. So if industrialization can be encouraged after taking proper care of mother Earth then this will be a very welcome step (Das, 2005; 2011).

There is a good scope of a lot of industries like chemical, cosmetic, electronic, entertainment, fishing, food, leather making, manufacturing, petroleum, pharmaceuticals, plastic pulp, handicraft and cottage industries, and many others. The handloom sector constitutes a distinctive feature of the rich cultural heritage of Odisha and plays a vital role in the economy and cultural identity of the country. Dwivedy (2011), Gadgil (1948), handloom Sector, next to the agriculture provides massive employment to the rural artisans. So far as our State is concerned, it has a rich tradition of producing handloom products. Even the skill and knowledge imbibed over the generation, has given the Odisha hand-woven textiles an unparalleled depth, range, strength, and vigor. Handloom cloth is one of the richest and resilient media of ethnic expressions. It is an ancient industry and is the source of livelihood for many villages in Odisha. Hand-woven fabrics are well-sought after both nationally and globally, weavers currently remain marginalized and often impoverished. Kumar (2010), the well-set power loom industry has further added to their woes. Handlooms represent a decentralized dispersed means of livelihood scattered over the state, environmental consonance, employment generation, skill enhancement, cultural integrity, and sustainability.

The fabrics and dyes used in the handloom industry are environment-friendly and often unique to a region. Almost all the synthetic colorants being synthesized from petrochemical sources through hazardous chemical processes poses threat towards its eco-friendliness. Hence, worldwide, growing consciousness about the organic value of eco-friendly products has generated renewed interest of consumers towards the use of textiles (preferably natural fiber product) dyed with eco-friendly natural dyes. Marjit & Maiti (2005), turmeric acts as a good natural dye as it has a good curcumin content and the turmeric produced in Kandhamal district of Odisha is certified to have an international standard. Artisan, Craftsmen and ethnic communities are practicing the process of vegetable dying generation after generation following old traditional methods. One of the major imperative to use natural dye is that no standardized form is available till now.

Hence there is plenty of scope for rapid development in terms of agricultural production, processing and application techniques of this color on textiles. This again invites the growth of dying industry which gives a path to the agricultural produce and protection of the environment. This paper makes a humble attempt to study the growth of cottage industries in Odisha. For the purpose, it uses descriptive statistics and time series analysis through SPSS (Samal, 1981; Singh, 2003).

2. Research Methods

2.1 Review of Literature

Sustainability in traditional Handlooms, Nallaval Chinnaswamy Balaji, Monto Moni, Indian Institute of science, Centre for Sustainable Technologies, Bangalore comprehensively evaluates and forecasts sustainability in the context of traditional handlooms in India.

Dyeing of Textiles with Natural Dyes Ashish Kumar Samanta and Adwaita Konar D*epartment of Jute and Fibre Technology, Institute of Jute Technology, University of Calcutta, India* has tried to show that natural dyes are better than synthetic dyes and textile industries across the globe have started concentrating on this aspect.

Batik on handlooms Cott, October on fabric with natural dye, Sankar Roy Maulik, Lina Bhowmik & Khusbu Agarwal; Indian journal of traditional knowledge,vol-13(4), October 2014,pp-788-794 explains that a greater emphasis on natural dye in textile industry could make a valuable contribution to environmental sustainability in the 21st century.

A Review of Handloom Export Units in India Prof. (Dr.) Kuldeep Singh1 and Dr. Monica Bansal2 1Principal, JCD Institute of Business Management Sirsa

2Assistant Professor, Department of Commerce, Panjab University Rural Centre, Kauni describes the strength of Handloom lies in the introducing innovative designs, which cannot be replicated by the Power loom sector. Thus,

Handloom forms a part of the heritage of India and exemplifies the richness and diversity of our country and the artistry of the weavers.

2.2 Research Theory

Approved List of Handicrafts

The following drafts have been approved as Handicraft Industries.

1. Applique	Metal Craft	Brass and Bell Metal	Horn Work
2. Art Leather	Natural fiber craft	Cane and Bamboo	Tribal Jewellery
3. Art Textiles	Paddy Craft	Sabai Grass Craft	Theatrical Dress
4. Artificial Bonsai	Palm leaf Decorative	Play Toys	Gopa Craft
5. Artistic Foot-ware	Palm-leaf Engraving	Seashell work	Embroidery
6. Artistic Mat	Paper Mache	Cloth Flower	Terracotta & Pottery
7. Batik Printing	Betel-nut craft	Silver Filigree	Dhokra Casting
Lacquer Work	Patta & Tasar Painting	GemStone Processing	Stone Carving

2.3 Handloom Industry

The Handloom Industry in Orissa is the largest cottage Industry providing employment and sustenance to 4 % of the population of the State. Right from producing superior artistic fabrics of excellence, this Industry also produces utility fabrics for the common masses at a cheaper cost. However, in face of teething competition in open market, the strengthening of the Industry and its diversification is the continuous need for its survival is being provided by Govt. assistance in different forms. To achieve this end, different schemes have been formulated and are working under the Textile Directorate of the state. The demographic picture of weaving sector is ST-1 % (6552), SC-30 % (123544) others –69 % (288165) having 1.19 lakh number of looms in the state. Of which 88186 noshes of looms have been brought under the cooperative fold and developmental activities are mostly being undertaken in this organized sector under the Directorate of Textiles. During 8th & 9th, five-year plan the following schemes were implemented by Directorate of Textiles through Zonal offices and all such assistance are being provided to the PWCS.

Product Range Product wise Important Clusters with high Concentration of Weaver	
(A) Silk tie-dye, Silk Bomkai & Cotton Bomkai Saree	Dist. - Boudh & Sonepur Blocks - 6 Looms - 6773 With a production potential of Rs. 4063.80 lakh
(B) Cotton tie-dye Saree and Furnishing	Dist. - Bargarh, Sonepur, Bolangir & Nuapada Blocks - 8 Looms - 8045 With a production potential of Rs. 3816.60 lakh
(C) Tasar thana Saree and Furnishing	Dist. - Bargarh, Jajpur, Balasore & Naptha Blocks - 3 Looms - 2424 With a production potential of Rs. 1163.52 lakh
(D) Khandua Silk Saree	Dist. - Cuttack Blocks - 2 Looms - 2255 With a production potential of Rs. 1217.70 lakh

(E) Berhampur Silk Saree Joda	Dist. - Ganjam Blocks - 1 Looms - 609 With a production potential of Rs. 292.32 lakh
(F) Single count Fine Cotton Saree (the 60s & above)	Dist. - Jagatsinghpur Blocks - 2 Looms - 2234 With a production potential of Rs. 804.24 lakh
(G) Medium Variety Cotton (40s to 60s)	Dist. - Jajpur, Khurda, Bargarh, Bolangir, Ganjam & Nayagarh Blocks - 10 Looms - 5563 With a production potential of Rs. 2003.47 lakh
(H) Coarse Variety Cotton (upto 40s)	Dist. - Bolangir, Cuttack, Khurda, Kendrapara, Nayagarh, Puri, Nuapara, Kalahandi, Kandhamal, Balasore, Bhadrak & Sambalpur, Sonepur Blocks – 36 Looms - 17220 With a production potential of Rs. 5166.00 lakh

2.4 Objective

To study the growth pattern of cottage industries in Odisha and employment generated through it. To find out the consistency of units established, the investment made and employment generated by the state government of Odisha in the last decade.

2.5 Research methodology

Area of the survey : Odisha
Type of Data: Secondary
Source: Directorate of Handicrafts and cottage industries, Odisha
Odisha economic survey 2014-15
Analysis: Descriptive statistics
Time series

3. Results and Analysis

3.1 In this section, it is explained the results of the research and at the same time is given the comprehensive discussion. Results can be presented in Analysis

Data

Table 1

Year	Number of units established during the year	Investment in crore	Employment generated (no of person)
2000-01	22,431	40.65	37,641
2001-02	26,196	61.72	36,937
2002-03	25,041	61.34	39,528
2003-04	23,287	67.87	39,743

2004-05	18,277	48.41	30,052
2005-06	13,363	39.42	22,734
2006-07	13,063	53.32	20,605
2007-08	9,011	38.3	15,368
2008-09	9,294	34.83	16,279
2009-10	14,539	37.55	28,305
2010-11	7,884	26.29	12,431
2011-12	7,293	30.31	9,187
2012-13	1,027	2.96	1393
2013-14	1,204	3.45	1507

Data analysis
Descriptive

Table 2

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std.	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
UNITS	14	25169	1027	26196	13707.86	2233.75	8357.91	7.0E+07	.061	.597	-1.095	1.154
INVEST	14	64.91	2.96	67.87	39.0300	5.2230	19.5428	381.921	-.532	.597	.003	1.154
EMPLOYME	14	38350	1393	39743	22265.00	3610.84	13510.54	1.8E+08	-.138	.597	-1.244	1.154
Valid N (listwise)	14											

ACF

MODEL: MOD_1.
Variable: UNITS Missing cases: 1 Valid cases: 14
Variable: INVEST Missing cases: 1 Valid cases: 14
Variable: EMPLOY Missing cases: 1 Valid cases: 14

Analysis -1
Autocorrelations: UNITS
Auto- Stand.
Lag Corr. Err. -1 -.75 -.5 -.25 0 .25 .5 .75 1 Box-Ljung Prob.

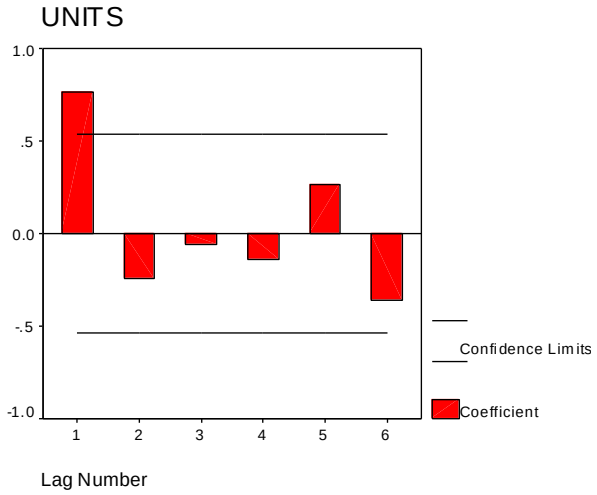
```
 1  .764  .241         .       □*********. *****          10.062   .002
 2  .483  .231         .       □********.*                14.425   .001
 3  .251  .222         .       □*****   .                 15.709   .001
 4  .047  .211         .       □*       .                 15.757   .003
 5  .020  .200         .       *        .                 15.767   .008
 6 -.070  .189         .      *□        .                 15.905   .014
```

Plot Symbols: Autocorrelations * Two Standard Error Limits.
Total cases: 15 Computable first lags: 13
Partial Autocorrelations: UNITS
Pr-Aut- Stand.
Lag Corr. Err. -1 -.75 -.5 -.25 0 .25 .5 .75 1

```
 1  .764  .267         .       □**********.****
 2 -.242  .267         .    ******□          .
 3 -.059  .267         .       *□            .
 4 -.137  .267         .     ***□            .
 5  .264  .267         .       □*****        .
 6 -.357  .267         .  ********□          .
```

Plot Symbols: Autocorrelations * Two Standard Error Limits.
Total cases: 15 Computable first lags: 13

Chart-1



Analysis-2
Autocorrelations: INVEST
Auto- Stand.

Lag	Corr.	Err.	-1 -.75 -.5 -.25 0 .25 .5 .75 1	Box-Ljung	Prob.
1	.643	.241	. *********. ***	7.126	.008
2	.367	.231	. ******* .	9.640	.008
3	.242	.222	. ***** .	10.836	.013
4	.062	.211	. * .	10.923	.027
5	.044	.200	. * .	10.972	.052
6	-.149	.189	. *** .	11.598	.072

Plot Symbols: Autocorrelations * Two Standard Error Limits.
Total cases: 15 Computable first lags: 13
Partial Autocorrelations: INVEST

Pr-Aut- Stand.

Lag	Corr.	Err.	-1 -.75 -.5 -.25 0 .25 .5 .75 1
1	.643	.267	. **********.**
2	-.079	.267	. ** .
3	.066	.267	. * .
4	-.179	.267	. **** .
5	.143	.267	. *** .
6	-.385	.267	. ******** .

Plot Symbols: Autocorrelations * Two Standard Error Limits.
Total cases: 15 Computable first lags: 13

Chart-2

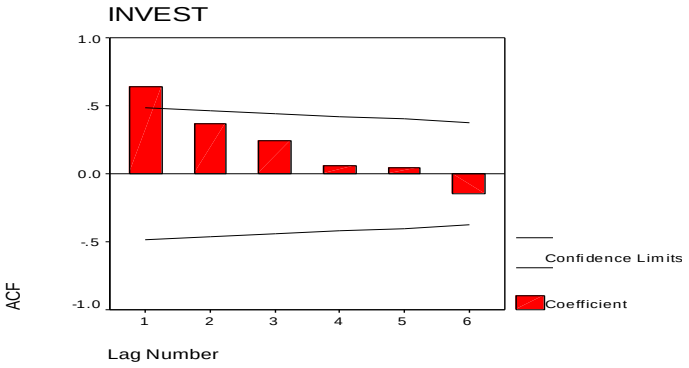
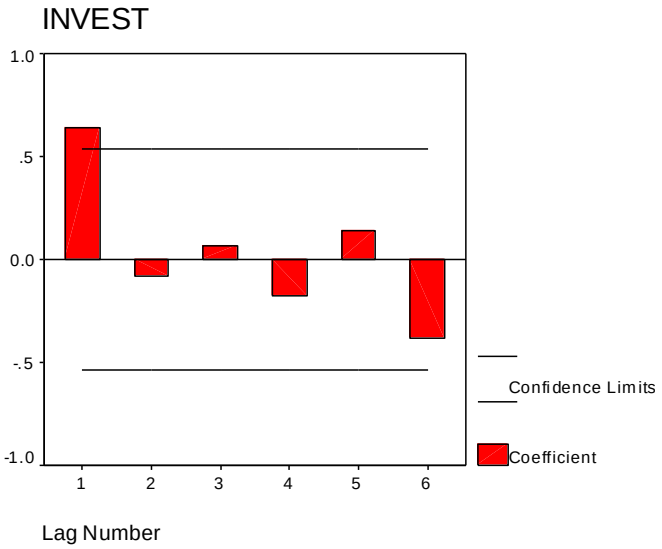


Chart-3



Analysis-3
Autocorrelations: EMPLOY
Auto- Stand.
Lag Corr. Err. -1 -.75 -.5 -.25 0 .25 .5 .75 1 Box-Ljung Prob.

1	.721	.241			.					8.965	.003
2	.452	.231			.					12.783	.002
3	.219	.222			.					13.760	.003
4	.017	.211			.	*				13.766	.008
5	.039	.200			.	*				13.803	.017
6	-.012	.189			.	*				13.807	.032

Plot Symbols: Autocorrelations * Two Standard Error Limits.
Total cases: 15 Computable first lags: 13
Partial Autocorrelations: EMPLOY
Pr-Aut- Stand.

```
Lag Corr.   Err. -1 -.75 -.5 -.25   0   .25 .5   .75   1
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□
  1   .721   .267         .        □**********.***
  2 -.142   .267         .      ***□         .
  3 -.109   .267         .       **□         .
  4 -.125   .267         .      ***□         .
  5   .288   .267         .        □******    .
  6 -.222   .267         .     ****□         .
```

Plot Symbols: Autocorrelations * Two Standard Error Limits.
Total cases: 15 Computable first lags: 13

Chart-4

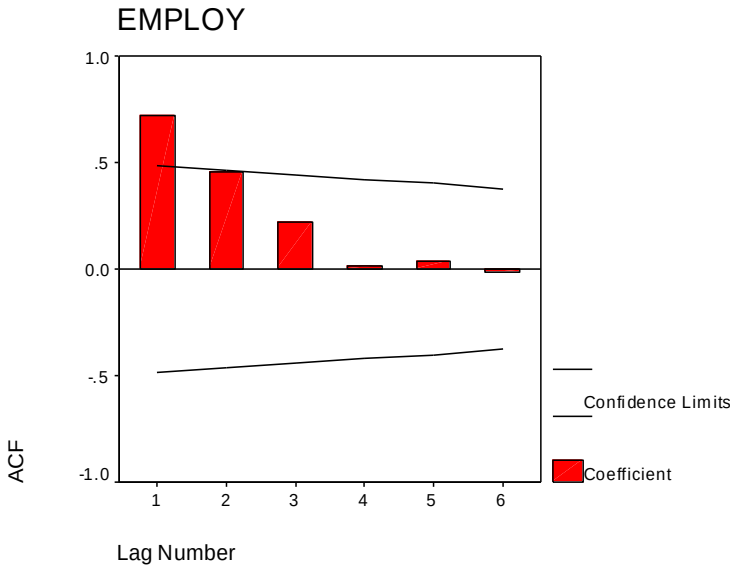
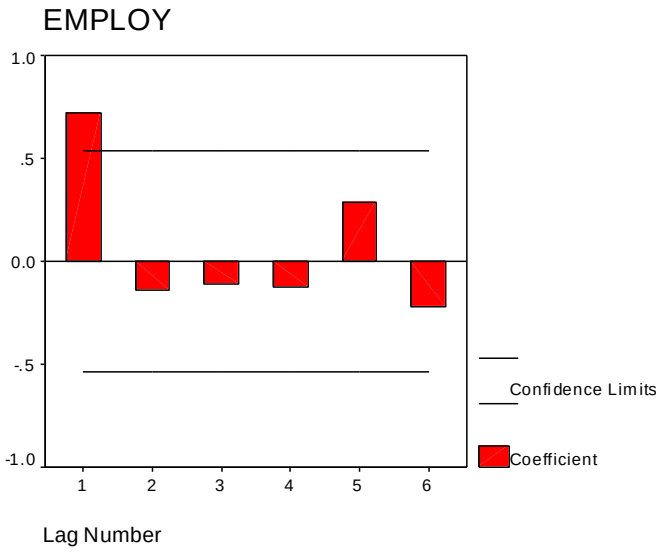


Chart-5



Analysis-4

Y=a+bt

Time is transformed into another variable X by the equation

X=2(t-2006.5)

So the equation is **Y=a+bX**

The two equation to find out the value of a and b are

$\sum Y=na+b\sum X$

$\sum XY=a\sum X+b\sum X^2$

Solving these two equations we have

a=13707.85

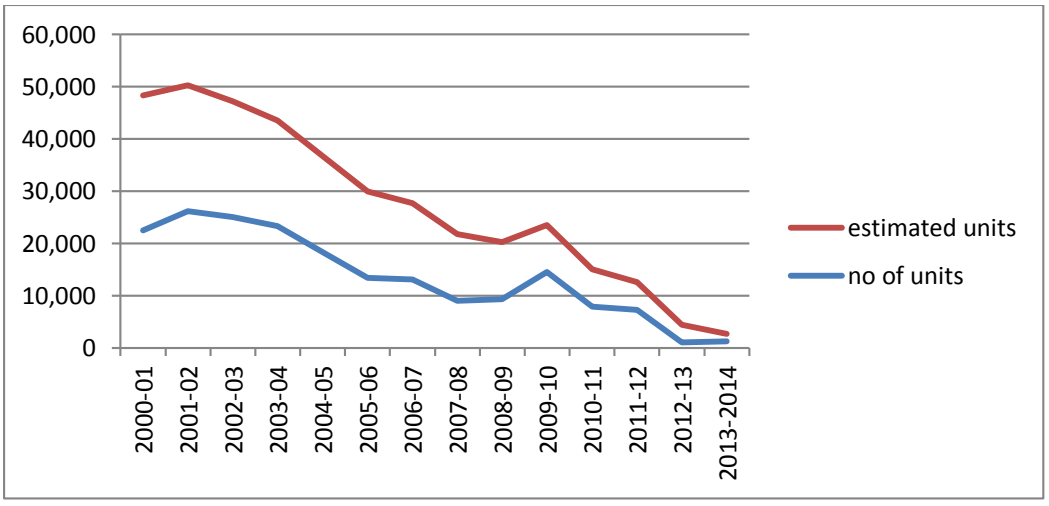
b=-939.90

Hence the equation is **Y=13707.85-939.9X**

Table 3

Year (t)	Number of Units (Y)	X=2(t-2006.5)	X^2	XY	Y (estimated)
2000-01	22,431	-13	169	291603	25926.55
2001-02	26,196	-11	121	288156	24046.75
2002-03	25,041	-9	81	225369	22166.1
2003-04	23,287	-7	49	163009	20286.3
2004-05	18,277	-5	25	91385	18407.35
2005-06	13,363	-3	9	40089	16527.75
2006-07	13,063	-1	1	13063	14647.75
2007-08	9,011	1	1	9011	12767.95
2008-09	9,294	3	9	27882	10888.15
2009-10	14,539	5	25	72695	9008.35
2010-11	7,884	7	49	55188	7128.55
2011-12	7,293	9	81	65637	5248.75
2012-13	1,027	11	121	11297	3368.15
2013-14	1,204	13	169	15652	1489.31

Chart-6



X-axis -year

Y-axis-number of units established

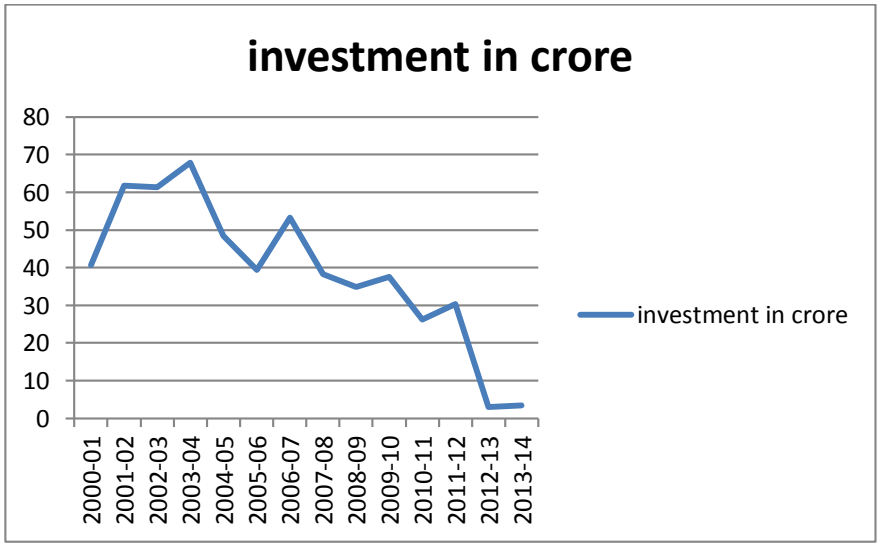
Analysis-5

Y= a+bt
Time is transformed into another variable X by the equation
X=2(t-2006.5)
So the equation is **Y= a+bX**
The two equation to find out the value of a and b are
$\sum Y = na + b\sum X$
$\sum XY = an\sum X + b\sum X^2$
Solving these two equations we have
a=38.31
b=-1.95
Hence the equation is **Y=38.31-1.95X**

Table 6

Year (T)	Investment In Crore	X=2(t-2006.5)	X^2	XY
2000-01	40.65	-13	169	-528.45
2001-02	61.72	-11	121	-678.92
2002-03	61.34	-9	81	-552.06
2003-04	67.87	-7	49	-475.09
2004-05	48.41	-5	25	-242.05
2005-06	39.42	-3	9	-118.86
2006-07	53.32	-1	1	-53.32
2007-08	38.3	1	1	38.3
2008-09	34.83	3	9	104.49
2009-10	37.55	5	25	187.75
2010-11	26.29	7	49	184.03
2011-12	30.31	9	81	272.79
2012-13	2.96	11	121	32.56
2013-14	3.45	13	169	44.85

Chart-7



X-axis -year
Y-axis-investment in crores
Analysis-6

Y=a+bt

Time is transformed into another variable X by the equation

X=2(t-2006.5)

So the equation is **Y=a+bX**

The two equation to find out the value of a and b are

$\sum Y=na+b\sum X$

$\sum XY=a\sum X+b\sum X^2$

Solving these two equations we have

a=22265

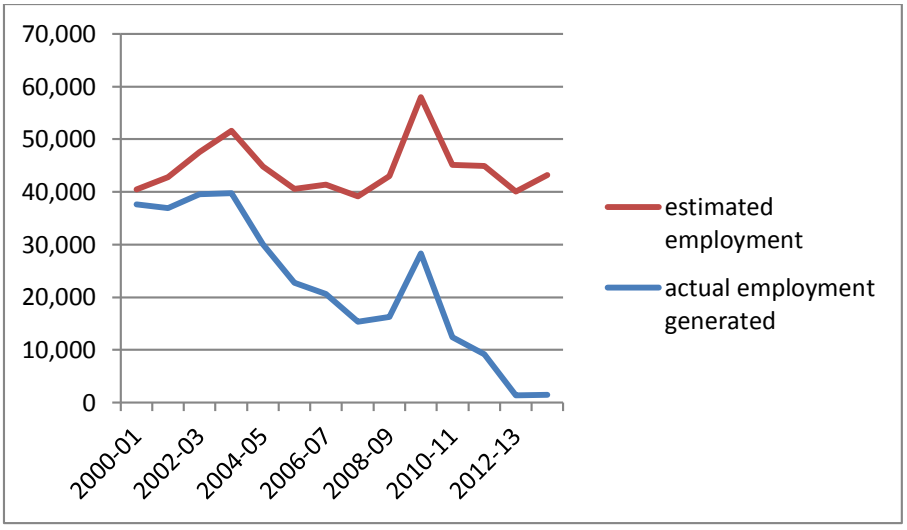
b=1492.65

Hence the equation is **Y=22265+1492.65X**

Table 7

Year (t)	Employment generated (no of person)	X=2(t-2006.5)	X^2	XY	Y (estimated)
2000-01	37,641	-13	169	-489333	2860.55
2001-02	36,937	-11	121	-406307	5845.85
2002-03	39,528	-9	81	-355752	8031.15
2003-04	39,743	-7	49	-278201	11816.45
2004-05	30,052	-5	25	-150260	14801.75
2005-06	22,734	-3	9	-68202	17787.05
2006-07	20,605	-1	1	-20605	20772.35
2007-08	15,368	1	1	15368	23757.65
2008-09	16,279	3	9	48837	26742.05
2009-10	28,305	5	25	141525	29728.25
2010-11	12,431	7	49	87017	32713.55
2011-12	9,187	9	81	82683	35698.65
2012-13	1393	11	121	15323	38684.15
2013-14	1507	13	169	19591	41667.15

Chart-8



X-axis -year

Y-axis-employment generated

3.2 Findings

This horizontal line (and its mirror image on the negative side) defines the critical limits or 95% confidence interval. If a bar goes beyond the horizontal line, then it is significant. If the bar lies beyond this range, then the partial correlation coefficient is statistically significant and autocorrelation between the present and lagged values of the variable is indicated.

The first-leg partial auto-correlation is above the critical limit in a number of cottage industries established, the investment made and employment generated which indicates the presence of non-stationary. From chart-6 it is found that the actual number of units established and the estimated number of units show a declining trend but they chase each other very closely but from chart-8 it can be seen that there is a wide gap between the employment generated by the cottage industries and the estimated employment though in this case also they show a declining trend. To sum up, it is found that all the three variables i.e. a number of units established, the investment made and employment generated show a declining trend. Figures, graphs, tables, and others that make the reader understand easily [2], [5]. The discussion can be made in several sub-chapters.

4. Conclusion

Industrialization is the panacea for Odisha economy to strike a balance between growth and employment and an alternative avenue for the disguised unemployed in the primary sectors. Cottage industry, handloom industry, in particular, realizes all these objectives without much adverse impact on the environment. Moreover, while vegetable dying is used, replacing the chemical dye is the most acceptable dictum of the day to have environmental friendly growth. But it is seen that much care has not been taken in this area. Large-scale industries create a lot of pollution but it is being created but time has come when these type of cottage industries should be promoted which generates a lot of employment without affecting the environment leading to sustainability. Sustainable industrialization is a process of development that (1) will set and meet wealth generation and production objectives (2) will build capacity and set conditions for "triple bottom line" financial, social and environmental objectives; and (3) will provide for institutional reform and commitment to innovation in order to meet developmental objectives. It will depend upon the interplay of government and business, community, and other stakeholders to set objectives, guidelines, regulations, and incentives. New metrics will be needed in order to achieve both sustainable industrialization and its link to a well-off environmentally region.

Conflict of interest statement and funding sources
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Statement of authorship
The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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