Retrospection of the Manufacturing Sector's Growth in Uttarakhand

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ABSTRACT: The Manufacturing sector is an essential sector for developing economies as well as developed economies. It contributes to every aspect of the economy regarding its contribution to gross domestic product and employment generation. The present study is to examine the growth of the manufacturing sector of Uttarakhand. The secondary data used in the study was collected from the central statistical office and states economics and statistics departments to estimate manufacturing sectors' contribution. The Kendall Tau and sen's estimator are used to find the trend in the manufacturing sector's contribution to nominal and real gross state domestic product of Uttarakhand. The study shows that the growth of Uttarakhand's manufacturing sector was higher in Phase I (base year 2004-05) estimation, while the growth rate of the manufacturing sector of Uttarakhand was lower in Phase II (base year 2011-12) estimation. During the study period, the growth of the manufacturing sector shows a decreasing trend in Uttarakhand's real and nominal Gross State Domestic Product (GSDP) in Phase I, while it was stable during Phase II.

KEY WORDS: Manufacturing sector, GSDP, Secondary data, growth.

1. INTRODUCTION

The manufacturing industries, with their sophisticated techniques and high level of productivity, were seen to be a source of both swiftly rising living standards and national prestige in the developed countries (Myrdal 1968). Manufacturing is the biggest private-sector employer in India Overall, more than 30 million people are employed by the sector (organized and unorganized) and become the engine of growth as it tries to incorporate the vastly available workforce in India, most of which is semi-skilled. Manufacturing holds a significant position in the Indian economy, accounting for nearly 16 percent of real Gross Domestic Product (GDP) in the financial year 2012 and employing about 12.0 percent of India's labour force[1].

Uttarakhand is a Himalayan state comes into existence in November 2000 after being separated from Uttar Pradesh. Uttarakhand is one of the fastest-growing states in India, thanks to the massive growth in capital investments arising from conducive industrial policy and generous tax benefits, which make the state an attractive destination for investments. The growth of the manufacturing sector increased in the initial years of study. Still, its growth over the previous year's decreased drastically, which is the cause of concern for the state of Uttarakhand. According to the Department for Promotion of Industry and Internal Trade (DPIIT), Gross State Domestic Product (GSDP) expanded at a Compound Annual Growth Rate (CAGR)[2] of 10.94 percent to Rs 2.93 trillion (US$ 41.99 billion). In the financial year, 2018-19 secondary sector is the highest contributor of state GDP, which contributed 48.93% with a growth rate of 6.94% over the previous year. The present study is a analysis of the growth of the manufacturing sector in nominal and real gross state domestic product of Uttarakhand and studies the manufacturing sector's growth in Uttarakhand.

2. LITERATURE REVIEW

Gupta .R, Sanjay (2012) studied a comparative study between organized and unorganized manufacturing sectors in India. The study found that the industry size of the unorganized sector is less compared to the organized sector, but productivity is much higher in the unorganized sector. As they explained, the wage rate is high for the organized sector.

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Papola, et al (2011) analyzed the growth and structure of manufacturing industries of different states in India in the pre and post-reform periods. The study found that the manufacturing share to GSDP was high in Gujarat at 30 percent. In other major states, the industrial sector's contribution to Gross State Domestic Product (GSDP) was Karnataka 19.85 percent, Maharashtra 23.46 percent, Tamil Nadu 23.3 percent, Haryana 20.0 percent, and Orissa 17.04 percent above the national figure of 17 percent. Only 9.96 percent of State Domestic Product (SDP) originated from the Karnataka manufacturing sector.

Tiwari, K.A and S. Roy (2011) investigated the contribution of different sectors of all the northeastern states of their State Gross Domestic Product (SGDP) for 1997-2007. Using the panel data estimation method of different forms of the study found a growing contribution of agriculture, industry, and service sectors towards their SGDP. The analysis has found any significant contribution of the manufacturing sector to the SGDP.

3. RESEARCH METHODOLOGY

The research design for the following study is descriptive. This study shows the manufacturing sector's contribution in Uttarakhand's state. The data used for the study of 15 years from 2004-05 to 2018-19 is divided into two Phases, on the basis of base year, which the central statistical office used to estimate gross domestic product. Phase I (base year 2004-05) and Phase II (base year 2011-12). Phase I and Phase II differentiated based on central statistical office estimation because, during the study period, it changes the base year for the estimation of the gross domestic product. The secondary data, collected from the Directorate of Economics and Statistics (Do ES), Uttarakhand, and Central Statistical Office (CSO) of India, is used to discuss and interpret the study. To better understand the data, an appropriate test as Kendall Tau is used to interpret the trend in the several critical indicators in the study. To maintain the authenticity and accuracy of the test, XL-STAT[3] is used. Furthermore, other interpretation tools like tabulation and bar graphs are used to elaborate on the collected data.

4. RESULT & DISCUSSION

4.1 Manufacturing Sector contribution to nominal gross state domestic product of Uttarakhand

Figure 1: The manufacturing sector contribution to Uttarakhand nominal gross state domestic product.
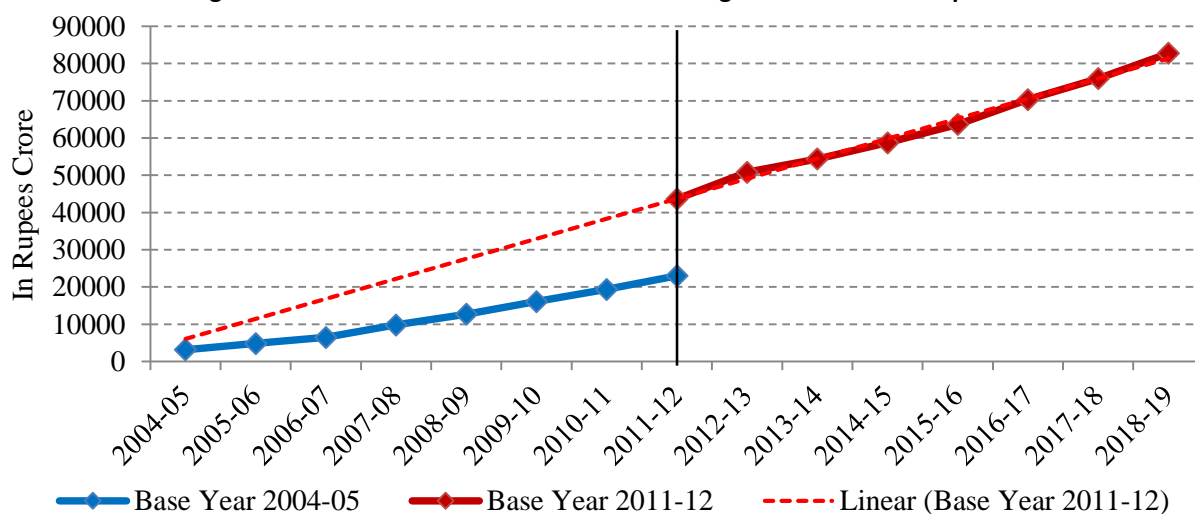

Figure (1) shows that the manufacturing sector's contribution to nominal gross state domestic product (GSDP) of Uttarakhand. Its contribution is estimated on two different base years, 2004-05 and 2011-12. The manufacturing sector contribution to nominal GSDP of Uttarakhand was 3155 crore in 2004-05. In 2005-06, it was increased by 53% compared to last year and reached 4831 crores. In 2006-07, it was 6484 crore which shows an increase of 34%, followed by 52% increase in the year 2007-08 and gone up to 9836 crores. In 2008-09 and 2009-10, it was increased by 29% and 27% separately and reached 12718 crores, 16105 crores. In 2010-11, it was 19357 crore which shows an increase of 20%. In 2011-12 new base years have been taken for the estimation by the CSO, and it contributes 43651 crores for the same year. In 2012-13, it was increased by 16% compared to last year and reached 50829 crores. In 2013-14, it was 54404 crore which shows an increase of 7%. In 2014-15 and 2015-16, it was increased by 8% each and reached 58743 crores and 63697 crores. In 2016-17, it was 70318 crore which shows an increase of 10% over the previous year, followed by an 8% increase in the year 2017-18 and gone up to 75952 crores and 9% increase in the year 2018-19 and gone

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[3] Trail Version- Key- 4B302E-2883C7-45A19C-35500E-6F0322-97EF2D

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up to 82747 crores. The above analysis shows that the manufacturing sector percentage contribution to nominal gross state domestic product of Uttarakhand was increased overall while decreases its percentage over the previous years.

Table 1: Specification of Trend Line Equation of the manufacturing sector contribution to Uttarakhand nominal gross state domestic product

Particulars	Kendall's tau	Sen's estimator	p-value (Two-tailed)	R^2	Trend Line Equation (TLE)
Manufacturing Sector (Base Year 2004-05)	1	28.0	0.003	0.986	y = 2898.3x - 1103.6
Manufacturing Sector (Base Year 2011-12)	1	28.0	0.001	0.993	y = 5380.8x + 664

Sources: Computed by the researcher based on CSO & DoES

Table (1) Shows curve fitting information regarding the manufacturing sector contribution to nominal gross domestic product (GSDP) of Uttarakhand in different base years. y = 2898.3x - 1103.6 and R^2 = 0.986 are the trend line equation (TLE) and coefficient of correlation (R^2) respectively for the Phase I, although y = 5380.8x + 664 and R^2 = 0.993 and the trend line equation (TLE) and coefficient of correlation (R^2) respectively for the Phase II.
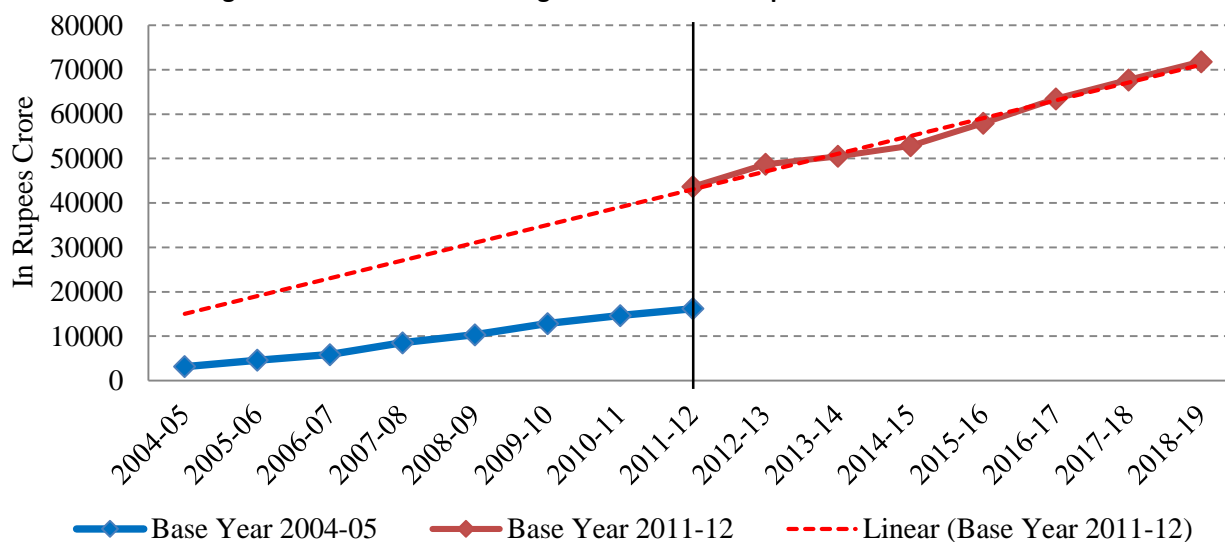
Null Hypothesis H0: There is no trend in the manufacturing sector contribution to Uttarakhand's nominal gross state domestic product.

Alternative Hypothesis Ha: There is a trend in the manufacturing sector contribution to Uttarakhand's nominal gross state domestic product.

Result: As the computed p-value is lower than the significance level alpha=0.05, Therefore, the Null Hypothesis is rejected, i.e., an Alternative Hypothesis is selected.

4.2 Manufacturing Sector contribution to real gross state domestic product of Uttarakhand

Figure 2: The manufacturing sector contribution to real gross state domestic product of Uttarakhand.

Sources: Computed by the researcher based on CSO & DoES

Figure (2) shows that the manufacturing sector's contribution to the real gross state domestic product (GSDP) of Uttarakhand. Its contribution is estimated on two different base years, 2004-05 and 2011-12. The manufacturing sectors contribution to GSDP of Uttarakhand was 3155 crores in the year 2004-05. In 2005-06 it was 4628 crores, which is increased by 47% over the previous year. In 2006-07, it was increased by 27% and reached 5855 crores, followed by 46% increase in the year 2007-08 and gone up to 8552 crores. In the year 2008-09 and 2009-10 it was increased by 21% and 24% separately and reached 10344 crores and 12871 crores. In 2010-11 it was 14661 crores, which increased by 14% compared to last year. In 2011-12 new base year has been taken for the estimation, it was 43651 crores manufacturing sector contribution to Uttarakhand's gross state domestic product for the same year. In 2012-13 it was increased by 12% over the previous year and reached 48697 crores. In 2013-14 and 2014-15, it shows

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an increase of 4% and 5% compared to last year and gone up to 50507 crores and 52884 crores respectively, followed by a 10% increase in 2015-16 and reached 57960 crores. In 2016-17 it was 63456 crores, which shows a rise of 9%, while in 2017-18, it was 67699 crores, which is increased 7% over the previous year. In 2018-19 it was increased by 6% and gone up to 71817 crores. The above analysis depicts that the manufacturing sector contribution to real GSDP of Uttarakhand was increased overall, while growth over the previous year's drastically decreased during the study period.

Table 2: Specification of Trend Line Equation of the manufacturing sector contribution to real gross state domestic product of Uttarakhand

Particulars	Kendall's tau	Sen's estimator	p-value (Two-tailed)	R^2	Trend Line Equation (TLE)
Manufacturing Sector (Base Year 2004-05)	1	21.0	0.003	0.993	y = 1957.4x + 726.64
Manufacturing Sector (Base Year 2011-12)	1	28.0	0.001	0.984	y = 4001.1x + 11071

Sources: Computed by the researcher based on CSO & DoES

Table (2) shows curve fitting information regarding the manufacturing sector contribution to gross state domestic product (GSDP) of Uttarakhand at constant prices in different base years. y = 1957.4x + 726.64 and R^2 = 0.993 are the trend line equation (TLE) and coefficient of correlation (R^2) respectively for Phase I, although y = 4001.1x + 11071 and R^2 = 0.984 and the trend line equation (TLE) and coefficient of correlation (R^2) respectively for the Phase II.

Null Hypothesis H0: There is no trend in the manufacturing sector contribution to Uttarakhand's real gross state domestic product.
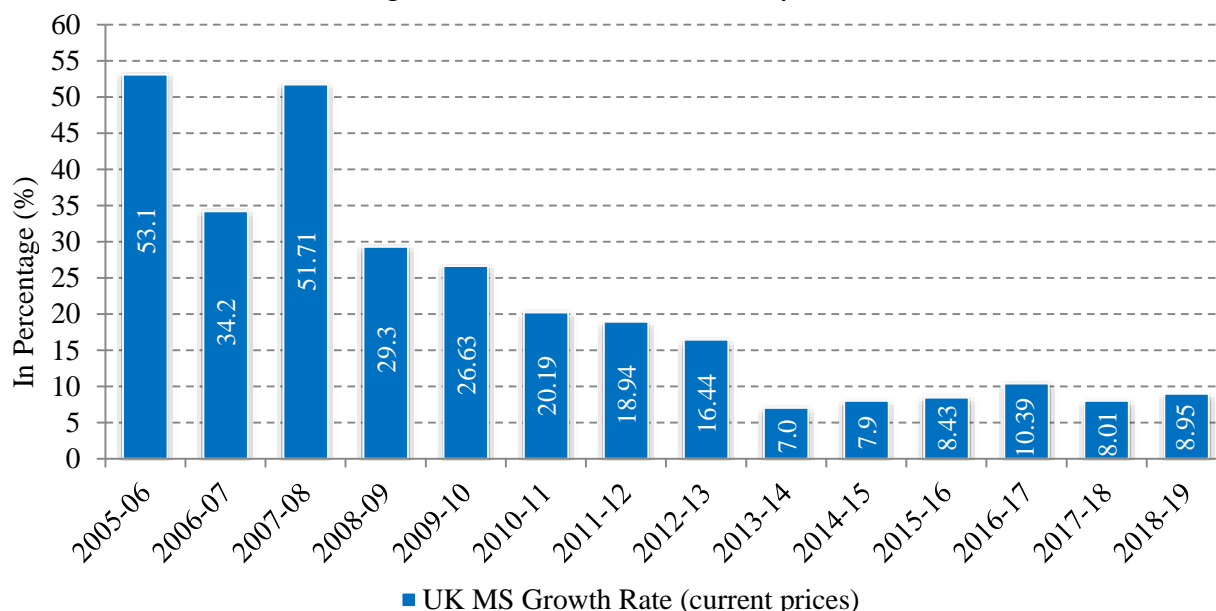**Alternative Hypothesis Ha:** A trend in the manufacturing sector contributes to Uttarakhand's real gross state domestic product.
Result: As the computed p-value is lower than the significance level alpha=0.05, Therefore, the Null Hypothesis is rejected, i.e., an Alternative Hypothesis is selected.

4.3 Growth Trend in the Manufacturing Sector of Uttarakhand
4.3.1 Manufacturing Sector's Growth Rate of Uttarakhand at nominal prices
Figure 3: Growth rate of the manufacturing sector of Uttarakhand at nominal prices.

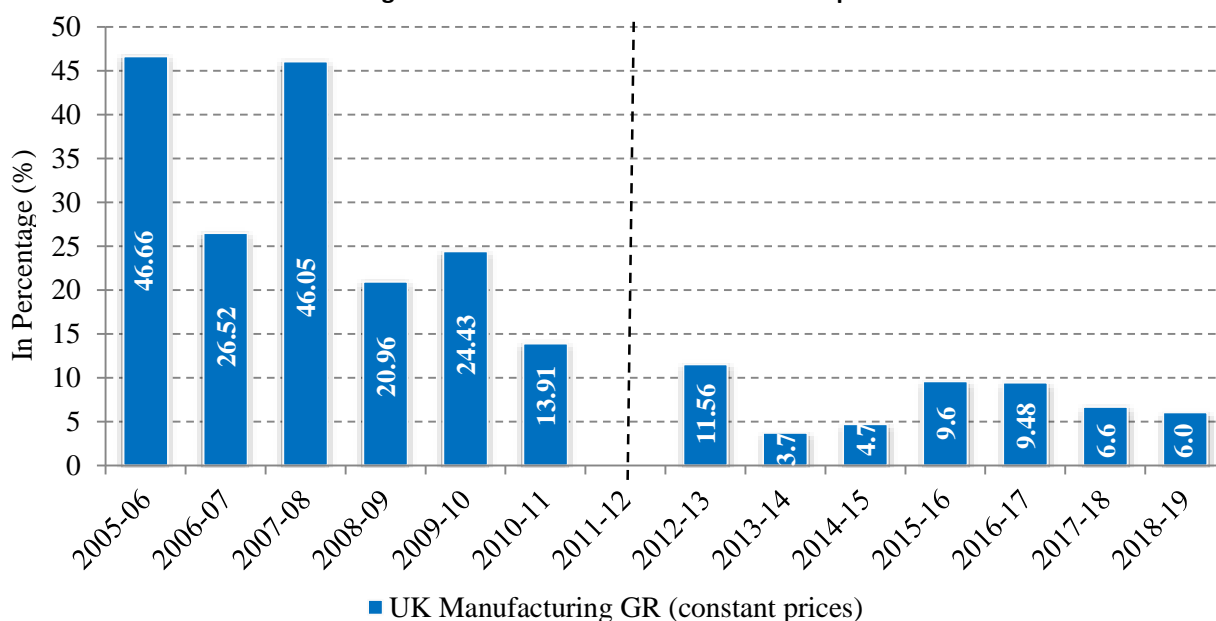**Sources:** Computed by the researcher based on CSO & DoES

Figure (3) depicts Uttarakhand and India's manufacturing sector growth rate at nominal prices. In 2005-06 manufacturing sector growth rate of the Uttarakhand was 53.1%, while 15.1% of India, it depicts in the figure that Uttarakhand's growth rate is much higher than overall India, followed by 20.19% of the Uttarakhand while 16.3% of India in the year 2010-11. In 2013-14, India surpasses Uttarakhand in growth rate, which is 8.9% of India and 7.03% of the Uttarakhand. In 2016-17 growth rate of the

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manufacturing sector of Uttarakhand was 10.39% which is higher than India overall, while India's growth rate is 8.7% for the same year. It depicts that in 2018-19 it was a similar or minor change for both. It was 8.95% of the Uttarakhand and 8.6% of India. The average manufacturing sector growth rate at current prices is 33.42% of Uttarakhand and 15.45% of India on the estimation of the base year 2004-05, while on the base year 2011-12 it was 9.60% average growth rate of the manufacturing sector of Uttarakhand, while 10.1% of India. The analysis shows that in Phase I (Base Year 2004-05), Uttarakhand's manufacturing sector average growth rate is higher than India. Phase II (Base Year 2011-12) shows India's average growth is higher than Uttarakhand. The growth of the manufacturing sector of Uttarakhand has been declining during the study period

4.3.2 Manufacturing Sector's Growth Rate of Uttarakhand (at real prices)
Figure 4: Growth rate of the manufacturing sector of Uttarakhand and India at real prices.

Sources: Computed by the researcher based on CSO & DoES

The above figure (4) depicts Uttarakhand and India's manufacturing sector growth rate at real prices. It depicts in the figure that in 2005-06 manufacturing sector growth rate of the Uttarakhand was 46.66%, while 10.1% of India, followed by 46.05% growth of Uttarakhand, while 10.3% growth in the year 2007-08, it shows that there is a vast difference in the growth rate of the Uttarakhand and India. In the year 2009-10, the growth rate of the manufacturing sector of Uttarakhand is higher than in India, which was 24.33% and 11.3%, respectively. The trend changed in 2013-14. Then India's manufacturing sector growth rate is higher than the Uttarakhand, which is 3.7% of Uttarakhand and 5% of India, followed by 9.5% growth rate of Uttarakhand and 13.1% of India. In 2018-19 it showed 6.08 of the Uttarakhand, while 5.7% growth rate of India. The average growth rate of the manufacturing sector at constant prices of Uttarakhand is 27.01% and 9.51% of India on the estimation of the base year 2004-05, while on the base year 2011-12 it was 7.4% average growth rate of the manufacturing sector of the Uttarakhand and 7.3% of India. The analysis shows that in Phase I (Base Year 2004-05), Uttarakhand's manufacturing sector average growth rate is higher than India. Phase II (Base Year 2011-12) shows the average growth rate of the manufacturing sector of Uttarakhand and India only depicts a minor difference of 0.1%, while its average growth rate is similar in the second phase.

5. CONCLUSION

The manufacturing sector is an important sector for developing and developed economies. It contributes to every aspect of the economy regarding its contribution to gross domestic product and employment generation. Uttarakhand is a newly constructed state of India. In its initial years, the growth of manufacturing was the all time high, but after that; the growth of manufacturing sector has been decreasing, which is the cause of concern. The present study is to examine the growth of the manufacturing sector in nominal and real gross state domestic product of Uttarakhand. The study found that the Kendall tau and sen's estimator shows the increasing trend in the manufacturing sector contribution in monetary terms to the nominal and real gross state domestic product of Uttarakhand. The growth of manufacturing sectors in the nominal and real gross state domestic product of Uttarakhand has been decreasing during the study period.

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