# A STUDY ON TRADE PERFORMANCE OF LEATHER INDUSTRY IN INDIA

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**Abstract**

The study investigated the trade performance of the leather industry in India and examined the relationship between trade performance and economic indicators. Using statistical methods such as Annual Growth Rate, Compound Growth Rate, Multiple Linear Regression, Descriptive Statistics, and the Augmented Dickey-Fuller Test, the analysis reveals that the export growth rate declined, while the import growth rate increased over the specified years. The trade balance showed an upward trend. The analysis confirms that net exports and trade openness are non-stationary at levels but become stationary at first differences. The results of the Multiple Linear Regression indicate a highly significant model fit. The study concludes that trade performance has shown a steady increase over the period and that net exports significantly influence the Net Domestic Product.

**Keywords:** Leather Industry, Trade Performance, Export Growth ADF Multiple Linear Regression

## Introduction

The leather industry in Indian developed during British rule in India, Bombay (now Mumbai) became a major trade hub, especially during the American Civil War when cotton demand soared. But after the war, the economy declined. After Independence, India faced the challenge of reclaiming control over its industries, including leather. British firms that had dominated the trade left the country, creating a need for self-sufficiency. During this period, the government encouraged local leather artisans and small-scale businesses to revive the industry and the Production was primarily focused on traditional leather goods such as footwear, bags, and saddlery, Exports remained limited due to outdated technology and a lack of modern tanning process **(Foundation Chamar-The Leather Archive of India) [5].**

The Footwear Design and Development Institute (FDDI) was established in 1986 by the Government of India, with the motive of developing skilled professionals and promoting technological advancements in the leather, footwear, and allied industries and provided professional education in footwear design, leather goods, and retail management and it introduced advanced footwear design and production techniques, quality control, productivity improvement, and cost efficiency for leather and footwear manufacturers. It assists Indian leather firms in meeting international standards for exports and developing skills of manufacturers which adapt to global trends and consumer demands. It also Encourages sustainable leather production and the use of biodegradable materials. **(Footwear Design & Development Institute)[6]**

India's leather industry has experienced substantial growth over the decades, driven by advancements in production technology and a growing global demand for high quality leather products. Historically, the industry was centred on the export of raw and cured hides and skins. However, with technological improvements, including the

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introduction of synthetic chemicals and modern tanning processes, the country began exporting tanned leather products by the mid-19th century **(Council of Leather Exports, Overview Indian Leather Industry 2024)**[7]

The Leather Industry holds a prominent place in the Indian economy. This sector is highly notable for its consistency in high export earnings and currently the import of this sector is gradually rising due to availability of raw materials, strengths of skilled manpower, innovative technology, increasing compliance to international environmental standards and the dedicated support of the supporting industries. Therefore, this study is examined to identify the trade level of leather and leather products and its contribution to nation's economic growth.

**Review of Literature**

**Sumangala Damodaran & Pallavi Mansingh (2008)** [8] the study of demand for products being both domestic as well as international. The study examines the India's top export earning industries and shows the dynamic shape of the industries right from the colonial times. **Shilpa Goel (2014)**[9] A detailed study about the value of the global Leather industry and shows about the India's export earnings. **Sandeep Kumar Gupta &Uday Shanker Racherla (2018)**[10] A focused study on the leather producing states and examine the relationship between social and environmental performance of leather industries. **Sonia Akhter et al., (2023)**[11] the study explored challenges hindering in Bangladesh's leather industry and environmental non-compliance. This study emphasized the need for policy reforms and better infrastructure to modernize the sector. **Supreet S J Talwar & Shubhendra Jit Talwar (2024)**[12] An investigated study to exploration of trend profit efficiency and its components for major leather exporting states from 1986-2016. The inefficiency of profit was mainly attributed to cost efficiency.

**Objectives**

1. To analysis the trade performance of leather products.
2. To examine the relationship of trade performance and economic growth.

**Methodology**

**Nature of Research Design**

The research design of the study is descriptive and analytical in nature. A descriptive study aims to provide a detailed description of the sample under the study.

**Source of Data**

The study is based on secondary sources of information. The data were collected from Various issues of Reserve Bank of India Report.

**Tools Used**

The basic statistical tools were used to analyse the collected data such as Annual Growth Rate, Compound Annual Growth Rate, Multiple Linear Regression, Descriptive Statistics and Unit Root Test.

**Annual Growth Rate**

Annual Growth Rate is the average increase or decrease in the value over a specific period of time. The average annual growth rate is determined by taking the numerical mean of specified year-on-year growth rates.

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$$\text{Annual Growth Rate} = \frac{\text{Current year} - \text{Beginning year}}{\text{Current year}} * 100$$

**Compound Annual Growth Rate**

Compound Annual Growth Rate is the mean annual growth rate over a specific period of time. It is often used to measure and compare the past performance of investment of project their expected returns.

$$\text{Compound Annual Growth Rate} = \left(\frac{\text{Ending value}}{\text{Beginning value}}\right)^{\frac{1}{n}} - 1 * 100$$

**Multiple Linear Regression**

Multiple Linear Regression is a statistical technique that uses several explanatory variables to predict the outcome of a response variable. The multiple linear regression has follows as:

$$\text{Net Domestic Product}_t = \beta_0 + \beta_1 \text{Trade openness}_t + \beta_2 \text{Net export}_t + \mu_t$$

**Descriptive Statistics**

Descriptive statistics are summary statistics that quantitatively summaries the features from a collection of data including measures of central tendency and variability.

**Mean** $\bar{x} = \frac{\sum_{i=1}^{N} x_i}{n}$

**Range** R = Maximum value – Minimum value

**Standard Deviation** $s = \sqrt{\frac{\sum_{i=1}^{N} (x-\bar{x})^2}{n-1}}$

**Unit root test**

The stationarity of the time series variables was tested using the Augmented Dickey-Fuller (ADF) test. These tests were employed to determine whether the variables contained unit roots, which indicates non-stationarity. The general form of the ADF equation is given as:

$$\Delta Y_t = \alpha + \beta_t + \gamma Y_{t-1} + \sum_{i-1}^{p} \theta \Delta Y_{t=1} + \varepsilon_t$$

Where;

$Y_t$ =the variable being tested, t= time trend, p= lag length, Δ = first difference term, $\varepsilon_t$ = error term

**Scope of the Study**

The study of Trade Performance of Leather and Leather Products in India enhances for the comparison of Leather exports and imports with other countries performance and also makes us to predict the future trends of trade performance of Leather and Leather products in India.

**Results and Discussion**

**Export on Leather Products**

**Table 1: Export on Leather Products**
**(Values in Crores)**

| S. No | Year | Export | AGR |
|---|---|---|---|
| 1 | 2000-2001 | 4643 | - |
| 2 | 2001-2002 | 4200 | -9.54 |
| 3 | 2002-2003 | 3944 | -6.10 |
| 4 | 2003-2004 | 4595 | 16.51 |
| 5 | 2004-2005 | 4831 | 5.14 |
| 6 | 2005-2006 | 5368 | 11.12 |
| 7 | 2006-2007 | 5502 | 2.50 |
| 8 | 2007-2008 | 5705 | 3.69 |
| 9 | 2008-2009 | 7297 | 27.91 |

| | | | |
|---|---|---|---|
| 10 | 2009-2010 | 6812 | -6.65 |
| 11 | 2010-2011 | 7194 | 5.61 |
| 12 | 2011-2012 | 9718 | 35.08 |
| 13 | 2012-2013 | 11399 | 17.30 |
| 14 | 2013-2014 | 14301 | 25.46 |
| 15 | 2014-2015 | 15501 | 8.39 |
| 16 | 2015-2016 | 15619 | 0.76 |
| 17 | 2016-2017 | 15726 | 0.69 |
| 18 | 2017-2018 | 15632 | -0.60 |
| 19 | 2018-2019 | 17923 | 14.66 |
| 20 | 2019-2020 | 17180 | -4.15 |
| 21 | 2020-2021 | 13514 | -21.34 |
| 22 | 2021-2022 | 18931 | 40.08 |
| 23 | 2022-2023 | 21091 | 11.41 |
| **CAGR** | | | **-2.00781** |

**Source: RBI Report**

As shown in the Table 1, the export of leather products fluctuated over the years. In 2000-2001, exports were recorded at 4,643 crores. The following year saw a decline of 9.54 per cent, bringing exports down to 4,200 crores. A similar downward trend continued in 2002-2003, with a further decrease of 6.10 per cent. However, the industry experienced growth in subsequent years, notably in 2003-2004, when exports increased by 16.51 per cent. The upward trend continued, with exports reaching 7,297 crores in 2008-2009, marking a 27.91 per cent rise. Despite periods of growth, the industry also faced declines, particularly in 2009-2010, when exports fell by 6.65 per cent. A significant drop was observed in 2020-2021, when exports declined by - 21.34 per cent. In the year 2021-2022 with an impressive growth of 40.08 per cent, bringing exports to 18,931 crores. By 2022-2023, exports had reached 21,091 crores.

**Import on Leather Products**

**Table 2: Import on Leather Products**
**(Value in Crores)**

| S. No | Year | Import | AGR |
|---|---|---|---|
| 1 | 2000-2001 | 36 | - |
| 2 | 2001-2002 | 39 | 8.33 |
| 3 | 2002-2003 | 44 | 12.82 |
| 4 | 2003-2004 | 61 | 38.64 |
| 5 | 2004-2005 | 92 | 50.82 |
| 6 | 2005-2006 | 150 | 63.04 |
| 7 | 2006-2007 | 213 | 42.00 |
| 8 | 2007-2008 | 305 | 43.19 |
| 9 | 2008-2009 | 429 | 40.66 |
| 10 | 2009-2010 | 449 | 4.66 |
| 11 | 2010-2011 | 672 | 49.67 |
| 12 | 2011-2012 | 1130 | 68.15 |
| 13 | 2012-2013 | 1366 | 20.88 |
| 14 | 2013-2014 | 1689 | 23.65 |
| 15 | 2014-2015 | 1946 | 15.22 |
| 16 | 2015-2016 | 2120 | 8.94 |
| 17 | 2016-2017 | 2123 | 0.14 |
| 18 | 2017-2018 | 2844 | 33.96 |
| 19 | 2018-2019 | 3484 | 22.50 |
| 20 | 2019-2020 | 3202 | -8.09 |
| 21 | 2020-2021 | 1321 | -58.74 |
| 22 | 2021-2022 | 2579 | 95.23 |
| 23 | 2022-2023 | 3873 | 50.17 |
| **CAGR** | | **0.081181** | |

**Source: RBI Report**

As illustrated in Table 2, the import of leather products fluctuated over the decades. In 2000-2001, imports were recorded at 36 crores. The following year saw a rise of 8.33 per cent, bringing imports up to 39 crores. A downward trend was recorded in 2019-2020, with a further decrease of -8.09 per cent and a similar downward trend were also continued the following year 2020-2021 with a decrease of -58.74 per cent. However, the industry experienced growth in following years, notably in 2021-2022, when import increased by 95.23 per cent. The upward trend continued, with import reaching 3,873 crores in 2022-2023, marking a 50.17 per cent rise.

**Descriptive Analysis**

**Table 3: Descriptive Statistics Table**

| Variable | Mean | Std. Dev. | Minimum | Maximum |
|---|---|---|---|---|
| **Net Domestic Product** | 15.5698 | .6947982 | 14.55952 | 16.45362 |
| **Net Export** | 9.031498 | .5080582 | 8.268732 | 9.753711 |
| **Trade Openness** | -2.143925 | .2384413 | -2.46864 | -1.797576 |

**Source: Computed**

As mentioned in the Table 3, the Net Domestic Product has an average value of 15.5698, with the maximum and minimum values of 14.55952 and 16.45362. The Net Export has a mean value of 9.031498, with the highest and lowest value of 8.268732 and 9.753711. The Trade Openness has an average value of -2.143925, with the maximum and minimum values of -2.46864 and -1.797576.

**Multiple Linear Regression**

**Unit Root Analysis of NDP, Net Export and Trade Openness**

The behavior of the series under investigation was closely examined using the Augmented Dickey Fuller test (Dickey and Fuller, 1981) to determine stationarity.

**Table 4: Unit Root Analysis of NDP, Net Export and Trade Openness**

| Variable | At Level | | 1st Difference | |
|---|---|---|---|---|
| | T-statistic | P value | T-statistic | P value |
| **Net Domestic Product** | -0.726 | 0.8399 | -4.475 | 0.0002 |
| **Net Export** | -0.254 | 0.9317 | -4.897 | 0.0000 |
| **Trade Openness** | -1.072 | 0.7262 | -4.738 | 0.0001 |

**Source: Computed**

$H_0$: There is non-stationary
$H_1$: There is stationary

As shown in the Table 4, the result of ADF test showed that the test statistics of NDP -0.726 with p-values of 0.8399, representing that the variable NDP is not stationary at level. After taking the first difference, the variable NDP becomes stationary with statistics of -4.897 (p = 0.0000). Similarly, all other variables such as Net export and Trade Openness were not stationary at level ( -0.254 with p value 0.9317 and -1.072 with p value 0.7262 respectively). After taking the first difference, the data becomes as stationary at 1 per cent level.

**Table 5: Regression Analysis**

| **Model Summary** | | |
|---|---|---|
| **R square** | 0.9767 | |
| **Adjusted R square** | 0.9744 | |
| **F-ratio** | 419.34 | **P-value** = 0.000 |

**Source: Computed**

As represented in the Table 5, the model summary shows a R square value of 0.9767 demonstrates that approximately 97.67 per cent of the variance in the dependent variable which can be explained by the independent variable included in the model. The Adjusted R square value of 0.9744, suggesting the positive relationship between the dependent and independent variables.

The F-ratio of 419.34 with a corresponding P-value of 0.0000 indicates the overall regression model is statistically significant. These results suggests that the independent variables significantly predict the dependent variable.

**Table 6: Coefficient of the Model**

| **Dependent Variable: Net Domestic Product** | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std. Err** | **t-ratio** | **P-value** |
| **Constant** | 1.617073 | .1157221 | 13.97 | 0.000 |
| **Net Export** | -.6305977 | .2365745 | -2.56 | 0.019 |
| **Trade Openness** | -.3867532 | 1.543853 | -0.25 | 0.805 |

**Source: Computed**

As demonstrated in the Table 6, the coefficient value -0.63 per cent which is highly significant at 1 per cent level which means that, on average net export increase a unit, the NDP will decrease, other thing being and also constant state that negative relationship between them. But, the coefficient -0.38 which is not statistically significance, so it was concluded that, from the estimation the variable net export only influences the NDP.

## Conclusion

The study analysed the export and import trends of leather products and their impact on Net Domestic Product (NDP). Export data showed fluctuations, with notable growth in 2021–2022 and a major dip in 2020–2021. Imports also followed a volatile trend, peaking in 2022–2023 after a sharp fall during the pandemic. Descriptive statistics indicated moderate variation in NDP, net export, and trade openness. Unit root analysis confirmed that all variables became stationary at first difference. The regression model was highly significant. Net export showed a significant negative impact on NDP, while trade openness was not statistically significant. The study concluded that the trade performance showed a steady increase over the period and the net export highly influences the Net Domestic Product.

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