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A Comparative Assessment of the Inter-Sectoral Linkages in India

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Abstract

The purpose of this study is to provide the comparative assessment for the identification of key industries in the Indian economy generating the backward as well as the forward linkages effects catering both the demand side and the supply side of the economy as a whole for the recent period of 2017 and 2018 using the input-output analysis by employing the Asian Development Bank Input-Output Database (2018 and 2020).The methodology utilizes the Leontief as well as the Ghoshian matrix and analyze the dataset for thirty five industries from the primary, secondary as well as the tertiary sector. The findings of the study support the decision of the government putting a thrust upon the secondary sector and in particular to the manufacturing industry by set of policy initiatives invigorating the same in the recent years as it constitute high linkage coefficients.

Introduction

The structure of an economy helps us to understand its growth prospects. The structure, from the viewpoint of occupation, of an economy in the developing as well as the developed nations can be broadly defined into primary, secondary and the tertiary sectors. In the 1930s, economist Colin Clark marked upon the conditions that led to the economic growth and reflected on the significance of the transformation of the occupation structure from the primary sector the secondary and the tertiary sector of an economy for the same. In the collective terms agriculture, animal husbandry, forestry and fisheries constitute the primary sector, whereas the manufacturing activities dominates the secondary sector and finally tertiary sector supports the primary and the secondary sector by the providing the activities pertained essential to their services such as transport, communication, banking, insurance and finance etc. In 2020, 41.49 percent of the workforce in India was employed in agriculture, while the other half was almost evenly distributed among the two other sectors, industry and services. With the primary sector grabbing the utmost priority in the First Five Year Plan, it was not before the Second Five Year Plan in 1956-61 that the secondary sector was given its due recognition with emphasizing the role of the capital goods industry shaping the

ideas of initiatives such as Make in India and Skill India focusing primarily on the manufacturing industry in the recent years. In 2020, the investment limit for the Micro, Small and Medium Enterprises (MSMEs) has also been revised upwards with an introduction of additional criteria of turnover hampering the elimination of distinction between the manufacturing and service sector. Pushing back the mirage of prominence of the manufacturing sector, McKinsey and Company Report (2020) insisted that it has generated low returns on capital, attracted little investment and the share of employment has increased by just one percentage point, compared with a five-point increase for the services sector in India's manufacturing sector in the last 13 years. In order to understand the significance as well as the basis of government initiatives prioritizing the secondary sector, the recent inter-sectoral linkages are needed to be analysed. This paper identified and analysed the key sectors that impact the activities of other sectors in India on the basis of buyer and supplier relationship leading to an existence of association among them. Battat *et al*. (1996) explicitly reflected on the inter-firm relationships and without taking into the account the foreign presence in the form of the FDI defined the backward integration as the purchasing of inputs, including parts, components and raw materials from other firms and

forward integration as marketing of the final products in an economy. The exploration of the backward and forward integration through the linkages effects is essential in studying the spillover effects of the various sectors analyzing the foreign presence as it suggests the effects of foreign firms on the domestic firms which is beyond the purview of this study.

Objective of the study
- To calculate the major industries with high inter-sectoral linkages in India in 2018.
- To make a comparative assessment between 2018 and 2020.
- To assess the major differences between 2018 and 2020 inter-sectoral linkages data.
- To conclude the study with the main findings.

Data
This study has utilised the latest estimates in US dollars in million on sectoral composition in India based on 35 sectors for 2018 and the more recent (2020) ISIC Rev. 4 classifications for 15 sectors from Asian Development Bank (ADB) Multiregional Input-Output Database for the year 2017 and 2018 (based on the latest issue of December 2020). Earlier the Ministry of Statistics and Programme Implementation (MoSPI) provided the latest Supply and Use Tables (SUTs) for India in 2015-16 from which Input-Output Transactions tables for which the commodity-wise analysis

has been conducted by Chadha *et al*. (2020). The rationale behind harnessing the ADB database is its homogeneity for industry-to-industry analysis.

Methodology
In line with evaluating the inter-sectoral linkages through interdependencies of various sectors, classical input output model has been employed for the Indian economy. Chiang and Wainwright (1992) emphasized on exploiting the results from system of simultaneous equations and matrix algebra offered by input output model to present the production planning and analysing the performance of the major sectoral players in the production process for the development of the country. The methodology harnessed in this study is based on the input-output model, by aggregating the branches of the Indian economy leading to 35 main branches (C1-C35) as specified in the Asian Development Bank (ADB) Multiregional Input-Output Database (2018) with total components (i.e., domestic goods and services + imports) (See table 1.1). Furthermore, the updated *ISIC Rev. 4* classifications have combined the data earlier available for 35 sectors into 15 sectors in the Asian Development Bank (ADB) Multiregional Input-Output Database Report (December,2020). This classification can be observed in the table 1.2 with various sectors added up according to the code to get a concise database.

Table 1.1: Industries in the 35 sector based classification in the ADB database.

Code	Industries
C1.	Agriculture, hunting, forestry, and fishing
C2.	Mining and quarrying
C3.	Food, beverages, and tobacco
C4.	Textiles and textile products
C5.	Leather, leather products, and footwear
C6.	Wood and products of wood and cork
C7.	Pulp, paper, paper products, printing, and publishing
C8.	Coke, refined petroleum, and nuclear fuel
C9.	Chemicals and chemical products
C10.	Rubber and plastics
C11.	Other non-metallic minerals
C12.	Basic metals and fabricated metal
C13.	Machinery
C14.	Electrical and optical equipment
C15.	Transport equipment
C16.	Manufacturing; recycling
C17.	Electricity, gas, and water supply
C18.	Construction
C19.	Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel
C20.	Wholesale trade and commission trade, except of motor vehicles and motorcycles
C21.	Retail trade, except of motor vehicles and motorcycles; repair of household goods
C22.	Hotels and restaurants
C23.	Inland transport
C24.	Water transport
C25.	Air transport
C26.	Other supporting and auxiliary transport activities; activities of travel agencies
C27.	Post and telecommunications
C28.	Financial intermediation
C29.	Real estate activities
C30.	Renting of M & Eq and other business activities
C31.	Public administration and defence; compulsory social security
C32.	Education
C33.	Health and social work
C34.	Other community, social, and personal services
C35.	Private households with employed persons

Source: Asian Development Bank input-output tables database (2018).

Table 1.2: Industries in the 15 sector based classification in the ADB database

Code	Industries	15 Sector Classification
C1.	Agriculture, hunting, forestry, and fishing	Agriculture, hunting, forestry, and fishing
C2.	Mining and quarrying	Mining and quarrying
C3. + C4. + C5. + C6. + C7. + C10. + C11. + C16.	Light Manufacturing	Food, beverages, and tobacco; Textiles and textile products; Leather, leather products, and footwear; Wood and products of wood and cork; Pulp, paper, paper products, printing, and publishing; Rubber and plastics; Other nonmetallic minerals; and Manufacturing n.e.c.; recycling
C8. + C9. + C12. + C13. + C14. +C15.	Heavy Manufacturing	Coke, refined petroleum, and nuclear fuel; Chemicals and chemical products; Basic metals and fabricated metal; Machinery n.e.c.; Electrical and optical equipment; and Transport equipment
C17.	Utilities	Electricity, gas, and water supply
C18.	Construction	Construction
C19. + C20. + C21.	Trade Service	Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel; Wholesale trade and commission trade, except of motor vehicles and motorcycles; Retail trade, except of motor vehicles and motorcycles; repair of household goods
C22.	Hotels and Restaurants	Hotels and Restaurants
C23.+ C24.+ C25.+ C26.	Transport Service	Inland transport; Water transport; Air transport; and Other supporting and auxiliary transport activities; activities of travel agencies
C27.	Telecommunications	Post and telecommunications
C28.	Financial Intermediation	Financial Intermediation
C29.	Real estate, renting and business services	Real estate activities and Renting of M&Eq and other business activities
C31.	Public administration and defense	Public administration and defense; compulsory social security
C32. + C33.	Education, health and social work	Education; and Health and social work
C34. + C35.	Other personal services	Other community, social, and personal services and Private households with employed persons

Source: Asian Development Bank input-output tables database (2020)

The Table 1.3 shows the simplified input-output table used in this study to determine the linkages among the sectors from C1. To C35 for both 2018 and 2020 data base written above. The sectors in the left most column of Table 1.3 are the sectors engaged in the supplying and distribution of the goods and services in the production process, while the sectors shown across the top row from C1. to C35. are the buyers of such the goods and services in the production process in India. Thus, each row adds up to the gross output that is equal to its corresponding total input, demonstrating the absorption of the output of each industry that would make way for the purpose of studying the forward integration, while each column shows the input sources of each industry reflecting on the analysis of the backward integration. The *Intermediate Uses* depicts consumption of goods and services resulting in value-added *(Zi)* are equal to the total inputs *(Xi)*. The final uses comprise of the consumption of households, Non-Profit Organizations and Institutions Serving Households (NPISHs), government, gross fixed capital formation, changes in inventories, and exports. In this table, imported goods and services are the part of Output as these products get consumed ultimately as final products.

Table 1.3: Input output table for the Indian economy.

	Industry	Intermediate Uses					Final Uses						Gross Total Output
		C1.	C2.	C3.	...	C35.	Final Consumption Expenditure by House-holds	Final Consumption Expenditure by NPISHs	Final Consumption Expenditure by govt.	Gross Fixed Capital Formation	Changes in Inventories and valuables	Exports	
Intermediate Inputs	C1.	X_{11}	X_{12}	X_{13}	......	$X_{1,35}$	Y_{11}	Y_{12}	...	...	...	Y_{16}	X_1
	C2.	X_{21}	...	...	......	...	...	...	...	...	...	...	..
	...	...	...	...	......	...	...	...	...	...	...	...	...
	...	...	...	...	......	$X_{34,35}$	...	...	...	...	...	...	...
	C35.	$X_{35,11}$	...	...	......	$X_{35,35}$	$Y_{35,1}$	...	...	...	...	$Y_{35,35}$	X_{35}
	Gross Value Added	Z_1	Z_2	Z_3	......	Z_{35}							
	Output	X_1	X_2	X_3	......	X_{35}							

The initial documentation on backward and forward inter-industry linkages method was done by Rasmussen (1957) which is unabashedly followed even today. The basic equation of the input output system is given by AX+Y=X that can be rewritten as X-AX=Y and can be further simplified as X (I-A) =Y; where A = technology coefficient matrix = total production; and Y = final demand. The first condition to solve the system of input-output table is to calculate the inverse matrix of (I-A).

i.e., $X = (I - A)^{-1} Y$

The demand side impact of any change in the output of a sector on the sectors producing and supplying its input requirements is captured by the backward linkage input. In this regard, Morrissey and O' Donoghue (2013) observed backward linkage to orient itself towards assigning multiple inputs to each single output and therefore, in the input-output

model $X = (I - A)^{-1} Y$ that can also be written as GY where $G = (I - A)^{-1}$, the backward linkage of the jth sector is derived as the sum of the elements of the jth column of the Leontief Inverse G. Conversely, forward linkage captures the supply side impact of any change in the output of a sector on the sectors buying and consuming its output as an input in their own production and since, in this case Morrissey an O'Donoghue (2013) established that multiple output are to be assigned to a single input and hence, forward linkage is derived for the ith sector as the sum of the elements of the ith row of the Ghoshian matrix H where $X' = m'(1 - B)^{-1}$ that can be written as m' H. However in order to determine the relative strength of interindustry linkage the normalised values of backward linkages and the forward linkages are to be found by dividing the sector linkage to the mean linkage of all sectors providing the interpretations for either stronger or weaker linkage effects. The normalized backward linkage (NBL) for sector j and normalized forward linkage (NFL) for sector j can be computed as:

$$\text{Normalised Backward Linkage} = \frac{BackwardLinkage_j}{\frac{1}{n}\sum_{j=1}^{n} BackwardLinkage_j}; \text{ and}$$

$$\text{Normalised Forward Linkage} = \frac{ForwardLinkage_i}{\frac{1}{n}\sum_{i=1}^{n} ForwardLinkage_i}$$

Thereafter, the measures of normalized backward and forward linkages of sectors (combined) in the economy can be used as a metric to identify key sectors as discussed in the next section.

Empirical Findings

This section presents the findings of the recent evidence of backward and forward linkages effect of various sectors in India in the Table 2.1. The extent to which various industries have been influenced by others and how much did those industries influence the others can be studied in the Table 1.2, with the help of measures of backward and forward linkages that would further determine key sectors in the Indian economy for 2018 ADB database. Accordingly, Rubber and plastics constitutes the largest backward linkage effect coefficient of 2.81 and therefore, being the largest supplier of inputs to other industries whereas Public administration and defence; compulsory social security and Private households with employed persons share lowest the backward linkage coefficient of unity. On the other hand, Chemicals and chemical products constitutes the largest forward linkage coefficient of 4.13 and hence, becoming the largest buyer of the final products of other industries in India whereas Private households with employed persons with unity as the forward linkage coefficient shows it having lowest impact from the other industries. Nonetheless, the degree of relative strength is shown by the Normalised Backward Linkage (NBL) coefficients as well as the Normalised Forward Linkage (NFL) coefficients in Table 2.1. The sectors that are observed to have the highest influence in the comprehensive economic system form what are known to be the key sectors of an economy. The key sectors then become capable of stimulating production though forward integration (i.e., upstream segments) and backward integration (i.e., downstream segments) of their respective supply chains.[5] For instance, According to Asian Development Bank (2020) if the backward linkage of economy-sector i is greater than that of economy-sector j, then increasing production in economy-sector i could induce higher economic activity from more sectors in its upstream chain than could increasing production in economy-sector j. Therefore, the government policies will be framed accordingly to the i sectorthat would hold the potential to be advantageous to the entire economy. Similarly, if the forward linkage of economy-sector j is greater than that of economy-sector k, then an increase in output of economy-sector j is more beneficial or stimulating because according to Asian Development Bank (2020) report, it induces an increase in production among sectors in its downstream supply chain. In simpler words, a sector is considered key if both its normalized backward and forward linkage measures have numerical values greater than 1. When, most of the sectors show a value of greater than unity for both backward and forward effects, significant presence of linkages in all of the industries of the whole economy depicts high interdependence.

Table 2.1: Industry-wise Backward and Forward Linkages and Normalised Forward and Backward Linkages in India for the year 2017

S. No.	Industry	Backward Linkages	NBL	Forward Linkages	NFL
1.	Agriculture, hunting, forestry, and fishing	1.43	0.74	3.23	1.97
2.	Mining and quarrying	1.80	0.93	3.80	0.94
3.	Food, beverages, and tobacco	2.48	1.28	1.82	0.85
4.	Textiles and textile products	2.48	1.28	1.64	0.74
5.	Leather, leather products, and footwear	2.53	1.30	1.42	0.67
6.	Wood and products of wood and cork	1.96	1.01	1.28	0.89
7.	Pulp, paper, paper products, printing, and publishing	2.60	1.34	1.71	1.30
8.	Coke, refined petroleum, and nuclear fuel	2.53	1.30	2.50	2.14
9.	Chemicals and chemical products	2.72	1.40	4.13	0.88
10.	Rubber and plastics	2.81	1.46	1.70	0.72
11.	Other non-metallic minerals	2.31	1.19	1.39	1.61
12.	Basic metals and fabricated metal	2.45	1.26	3.10	0.87
13.	Machinery, nec	2.49	1.28	1.68	1.02
14.	Electrical and optical equipment	2.58	1.33	1.96	0.92
15.	Transport equipment	2.71	1.40	1.78	1.08
16.	Manufacturing, nec; recycling	2.61	1.35	2.09	1.30
17.	Electricity, gas, and water supply	2.14	1.10	2.50	0.81
18.	Construction	2.15	1.12	1.57	0.62
19.	Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel	1.27	0.65	1.19	1.28
20.	Wholesale trade and commission trade, except of motor vehicles and motorcycles	1.27	0.65	2.48	1.69
21.	Retail trade, except of motor vehicles and motorcycles; repair of household goods	1.27	0.65	3.26	0.88
22.	Hotels and restaurants	2.24	1.15	1.70	1.83

23.	Inland transport	2.06	1.06	3.54	0.53
24.	Water transport	1.71	0.88	1.03	0.54
25.	Air transport	1.73	0.89	1.04	0.60
26.	Other supporting and auxiliary transport activities; activities of travel agencies	1.74	0.90	1.15	0.72
27.	Post and telecommunications	1.34	0.69	1.39	1.37
28.	Financial intermediation	1.28	0.66	2.64	0.54
29.	Real estate activities	1.14	0.59	1.04	1.09
30.	Renting of Mach.&Equi. and other business activities	1.40	0.72	2.11	0.52
31.	Public administration and defence; compulsory social security	1.00	0.52	1.01	0.59
32.	Education	1.18	0.61	1.13	0.53
33.	Health and social work	1.82	0.94	1.03	0.79
34.	Other community, social, and personal services	1.32	0.68	1.53	0.52
35.	Private households with employed persons	1.00	0.52	1.00	1.97

Source: Author's calculation of Asian Development Bank (ADB) Multiregional Input-Output Database (2018)

In order to refine our understanding of the normalised coefficients Table 2.2 has classified various industries into the four groups depending on the value of their coefficients. The first quadrant deals with the set of industries that are strongly associated with each other and addresses our primary question of identification of key industries. Since, these industries i.e., Pulp, paper, paper products, printing, and publishing; Coke, refined petroleum, and nuclear fuel; Other non-metallic minerals; Machinery, Transport equipment; Manufacturing, recycling; and Hotels and restaurants represent both NBL and NFL coefficients greater than one, these industries can be identified as the key sectors or as the main drivers of the economic growth of India.

Table 2.2: Intensity wise Normalised Backward Linkages (NBL) and Normalised Forward Linkages (NFL) for 2017 in India

		Normalised Forward Linkage Coefficients	
		NFL>1	NFL<1
Normalised Forward Linkage Coefficients	NBL>1	Pulp, paper, paper products, printing, and publishing; Coke, refined petroleum, and nuclear fuel; Other non-metallic minerals; Machinery, nec; Transport equipment; Manufacturing, recycling; and Hotels and restaurants	Food, beverages, and tobacco; Textiles and textile products; Leather, leather products, and footwear; and Wood and products of wood and cork; Chemicals and chemical products; Rubber and plastics; Basic metals and fabricated metal; Electrical and optical equipment; and Inland transport
	NBL<1	Agriculture, hunting, forestry, and fishing; Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel; Wholesale trade and commission trade, except of motor vehicles and motorcycles; Post and telecommunications; Real estate activities; and Private households with employed persons	Mining and quarrying; Retail trade, except of motor vehicles and motorcycles; repair of household goods; Water transport; Air transport; Other supporting and auxiliary transport activities; activities of travel agencies; Financial intermediation; Renting of Mach.& Equi. and other business activities; Public administration and defence; compulsory social security; Education; Health and social work; and Other community, social, and personal services.

Source: Compiled by the author.

The second quadrant points out the industries that are invigorating the production process in the other sectors, in other words, these industries are majorly relied upon by the other industries since these have NBL coefficient greater than unity but NFL coefficient of less than one. In India such industries are majorly form a part of the secondary sector such as food, beverages, and tobacco; textiles and textile products; leather, leather products, and footwear; and wood and products of wood and cork; chemicals and chemical products; rubber and plastics; basic metals and fabricated metal; electrical and optical equipment; and inland transport. The third quadrant represent the industries that do not highly on the other industries with both NBL and NFL coefficient less than one, these industries comprise of primary, secondary as well as the tertiary activities such as mining and quarrying; retail trade, except of motor vehicles and motorcycles; repair of household goods; water transport; air transport; other supporting and auxiliary transport activities; activities of travel agencies; financial intermediation; renting of mach. & equi. and other business activities; public administration and defence; compulsory social security; education; health and social work; and other community, social, and personal services. The major industries in the primary and the tertiary sector such as agriculture, hunting, forestry, and fishing; sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel; wholesale trade and commission trade, except of motor vehicles and motorcycles; post and telecommunications; real estate activities; and private households with employed persons in Table 2.2 with the NBL coefficient of less than unity but NFL coefficient of greater than one shows that these industries rely on the production process of other industries.

Table 2.3: Industry-wise Forward and Backward Linkages in India for the year 2018

S. No.	Industry	NBL	NFL
1.	Agriculture, hunting, forestry, and fishing	0.91	0.95
2.	Mining and quarrying	1.08	1.69
3.	Light Manufacturing	1.46	1.08
4.	Heavy Manufacturing	1.37	1.21
5.	Utilities	1.13	1.71
6.	Construction	1.31	0.82
7.	Trade Service	0.81	0.82

8.	Hotels and Restaurants	1.18	1.07
9.	Transport Service	0.89	1.21
10.	Telecommunications	0.83	1.39
11.	Financial Intermediation	0.82	1.52
12.	Real estate, renting and business services	0.85	0.87
13.	Public administration and defense	0.67	0.67
14.	Education, health and social work	0.86	0.71
15.	Other personal services	0.84	1.05

Source: Adapted from Asian Development Bank (ADB) Multiregional Input-Output Database (2020)

The values of the respective NBL and NFL were pre-calculated in the Asian Development Bank's Report (2020) for the 15 sectors of the Indian economy and the table 2.4 shows the key sectors for the year 2018 that was covered most recently. Accordingly, *Mining and quarrying; Light Manufacturing; Heavy Manufacturing; Utilities; Hotels and Restaurants* are the key sectors in the ADB (2020) input output database as these majorly secondary sectors are generally dependent on other sectors with values of both the measures being greater than 1.

Table 2.4: Intensity wise Normalised Backward Linkages (NBL) and Normalised Forward Linkages (NFL) for 2017 in India

		Normalised Forward Linkage Coefficients	
		NFL>1	**NFL<1**
Normalised Forward Linkage Coefficients	NBL>1	Mining and quarrying; Light Manufacturing; Heavy Manufacturing; Utilities; Hotels and Restaurants	Construction
	NBL<1	Transport Services; Telecommunications; Financial Intermediation and Other personal services	Agriculture, hunting, forestry, and fishing; Trade Service Real estate, renting and business services; Public administration and defense; Education, health and social work

Source: Compiled by the author.

The Construction sector is dependent on inter-industry supply as its value of NBL is greater than one but the NFL is less than one. On the hand, with NBL measure less than one and NFL greater than sectors such as Transport Services; Telecommunications; Financial Intermediation and Other personal services are dependent on inter-industry demand. With the combined measures of NBL and NFL being less than unity Agriculture, hunting, forestry, and fishing; Trade Service Real estate, renting and business services; Public administration and defense; Education, health and social work are independent of other sectors for their inputs in the ADB (2020) database covering 2018.It can be observed that Light Manufacturing and Heavy Manufacturing form the key industries in the secondary sector while Mining and quarrying is majorly thought of as the primary sector also came across as the key industries in the recent times. Furthermore, Utilities; Hotels and Restaurants from the tertiary sector form the part of the key industries. Therefore, the findings of this study show a shift from commodity-based production to more industrial and service-oriented activities along with changes in the production technologies in India. Hence, it can be safely deduced that decision of the government putting a thrust upon the secondary sector and in particular to the manufacturing industry by set of policy initiatives invigorating the same in the recent years is supported by the high linkage coefficients from Asian Development Bank input-output table database (2020) enabling growth inducing effects in the Indian economy. In addition, it has been noticed in this study that ADB input-output table dataset for the year 2018 and 2020 are reliable source and validate the industry to industry analysis of the Indian economy in finding the inter-industry linkages however ADB dataset in 2018 was defined for 35 sectors enabling individual analysis of various industries forming the vertical integration with other sectors whereas ADB dataset in 2020 presents a concise picture of the inter sectoral linkages based on five sector based compartmentalization inducing a comprehensive analysis of the addition of the certain values for the sectors, which represent their underlying relationships inadequately. Moreover there are certain values of the Leontief matrix that may appear to be missing for the year 2020 in the ADB input-output tables dataset. This study can form the basis of finding international linkages of the Indian economy as well as examining the impact of the spread of the inter-industry linkages through the spillover effects which acts as the measure of distribution inter-industry flows across all sectors in India.

Conclusion

The production and the exchange effects captured by the backward and the forward linkages with a standard Asian Development Bank database (2020) makes a favourable argument in support of the policy initiatives focusing primarily the secondary sector and manufacturing industry in particular which can be regarded as the key player influencing the growth prospects in India. The various industries pertaining to the manufacturing sector indicated a significantly strong interdependence with other industries in the Indian economy. The development strategy and the implemented policies must take into the consideration the causes and effects of such inter-industry linkages to boost the domestic as well as the global competitiveness.

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