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Industry Report: Flexible Packaging Machinery

December 2024

Disclaimer

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Global Macroeconomic Scenario

The global economy, estimated at 3.1% in 2023, is expected to show resilience at 3.1% in 2024 before rising modestly to 3.2% in 2025. Between 2021 – 2022, global banks were carrying a historically high debt burden after COVID-19. Central banks took tight monetary measures to control inflation and spike in commodity prices. Russia's war with Ukraine further affected the global supply chains and inflated the prices of energy and other food items. These factors coupled with war-related economic sanctions impacted the economic activities in Europe. Any further escalation in the war may further affect the rebound of the economy in Europe.

While China, the largest manufacturing hub of world, was facing a crisis in the real estate sector and prices of properties were declining between 2020 - 2023, with the reopening of the economy, consumer demand is picking up again. The Chinese authorities have taken a variety of measures, including additional monetary easing, tax relief for corporates, and new vaccination targets for the elderly. The Chinese Government took several steps to help the real estate sector including cracking down on debt-ridden developers, announcing stimulus for the sector and measures to encourage the completion and delivery of unfinished real estate projects. The sector is now witnessing investments from developers and demand from buyers.

Global headline inflation is set to fall from an estimated 6.8% in CY 2023 to 5.8% in CY 2024 and to 4.4% in CY 2025. This fall is swifter than anticipated across various areas, amid the resolution of supply-related problems and tight monetary policies. Reduced inflation mirrors the diminishing impact of price shocks, particularly in energy, and their subsequent influence on core inflation. This decrease also stems from a relaxation in labour market pressure, characterized by fewer job openings, a slight uptick in unemployment, and increased labour availability, occasionally due to a significant influx of immigrants.

Global GDP Growth Scenario

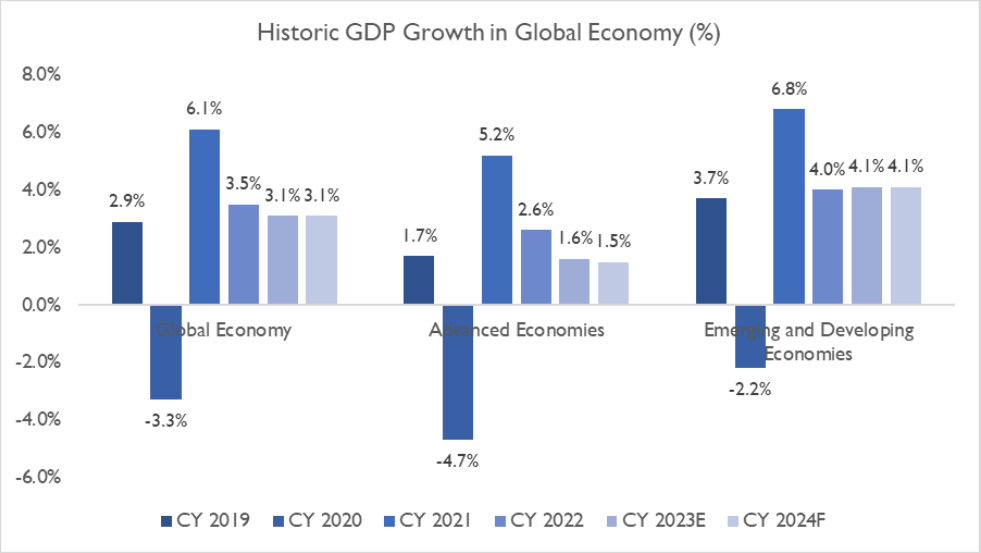
The global economy started to rise from its lowest levels after countries started to lift the lockdown in 2020 and 2021. The pandemic lockdown was a key factor as it affected economic activities resulting in a recession in the year CY 2020, as the GDP growth touched -3.3%.

In CY 2021 disruption in the supply chain affected most of the advanced economies as well as low-income developing economies. The rapid spread of Delta and the threat of new variants in mid of CY 2021 further increased uncertainty in the global economic environment.

Global economic activities experienced a sharper-than-expected slowdown in CY 2022. One of the highest inflations in decades, seen in 2022, forced most of the central banks to tighten their fiscal policies. Russia’s invasion of Ukraine affected the global food supply resulting in a further increment in the cost of living.

Further, despite initial resilience earlier in 2023, marked by a rebound in reopening and progress in curbing inflation from the previous year's highs, the situation remained precarious. Economic activity lagged behind its pre-pandemic trajectory, particularly in emerging markets and developing economies, leading to widening

disparities among regions. Numerous factors are impeding the recovery, including the lasting impacts of the pandemic and geopolitical tensions, as well as cyclically-driven factors such as tightening monetary policies to combat inflation, the reduction of fiscal support amidst high debt levels, and the occurrence of extreme weather events. As a result, global growth declined from 3.5% in CY 2022 to 3.1% in CY 2023.

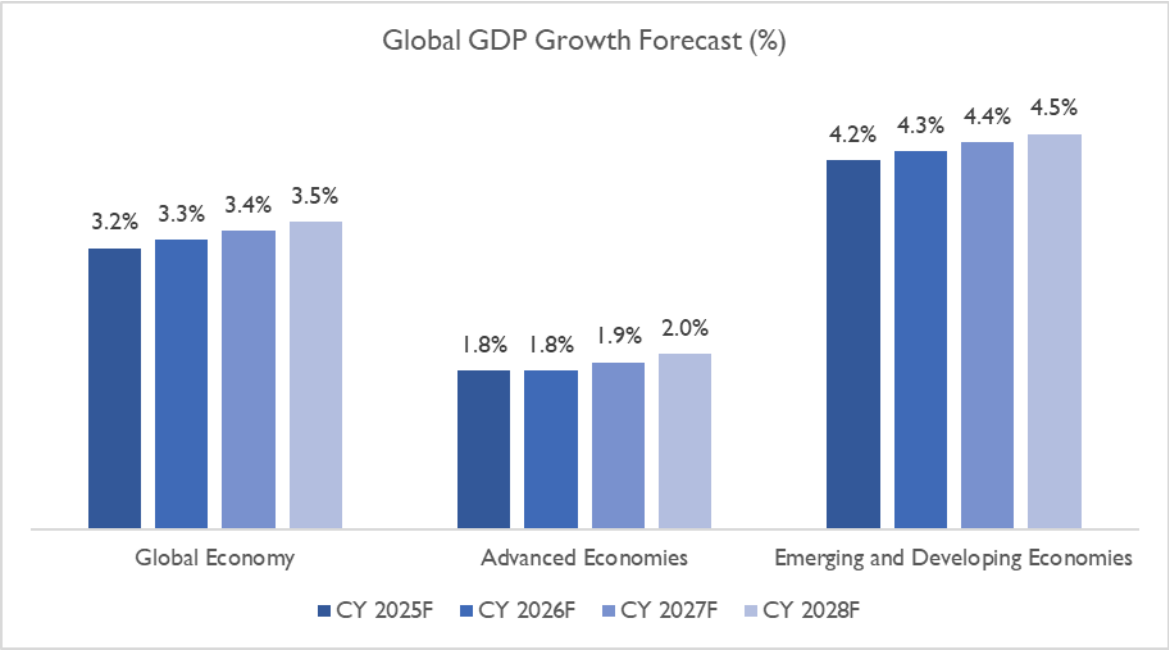


Source – IMF Global GDP Forecast Release 2024

Note: Advanced Economies and Emerging & Developing Economies are as per the classification of the World Economic Outlook (WEO). This classification is not based on strict criteria, economic or otherwise, and it has evolved over time. It comprises of 40 countries under the Advanced Economies including the G7 (the United States, Japan, Germany, France, Italy, the United Kingdom, and Canada) and selected countries from the Euro Zone (Germany, Italy, France etc.). The group of emerging market and developing economies (156) includes all those that are not classified as Advanced Economies (India, China, Brazil, Malaysia etc.)

In the current scenario, global GDP growth is estimated to have recorded a moderate growth of 3.1% in CY 2023 as compared to 3.5% growth in CY 2022. While high inflation and rising borrowing costs are affecting private consumption, on the other hand, fiscal consolidation is affecting government consumption.

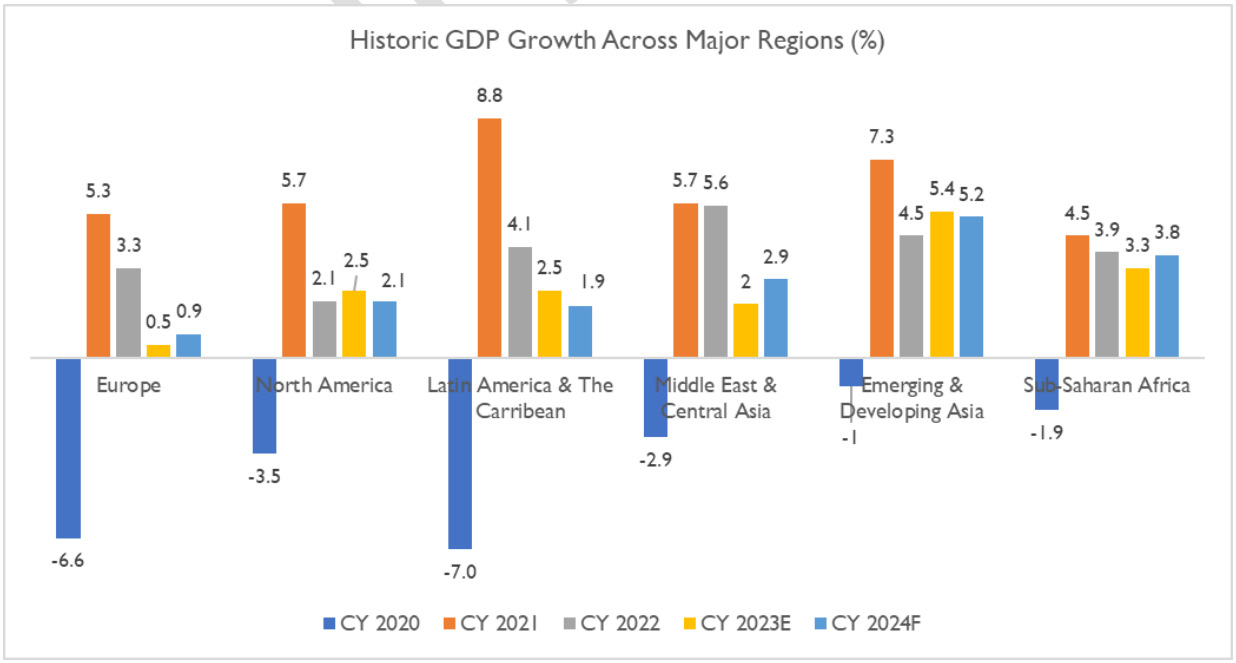
Slowed growth in developed economies will affect the GDP growth in CY 2024 and global GDP is expected to record a flat growth of 3.1% in CY 2024. The crisis in the housing sector, bank lending, and industrial sectors are affecting the growth of global GDP. Inflation forced central banks to adopt tight monetary policies. After touching the peak in 2022, inflationary pressures slowly eased out in 2023. This environment weighs in for interest rate cuts by many monetary authorities.



Source – IMF Global GDP Forecast Release 2024, D&B Estimates

GDP Growth Across Major Regions

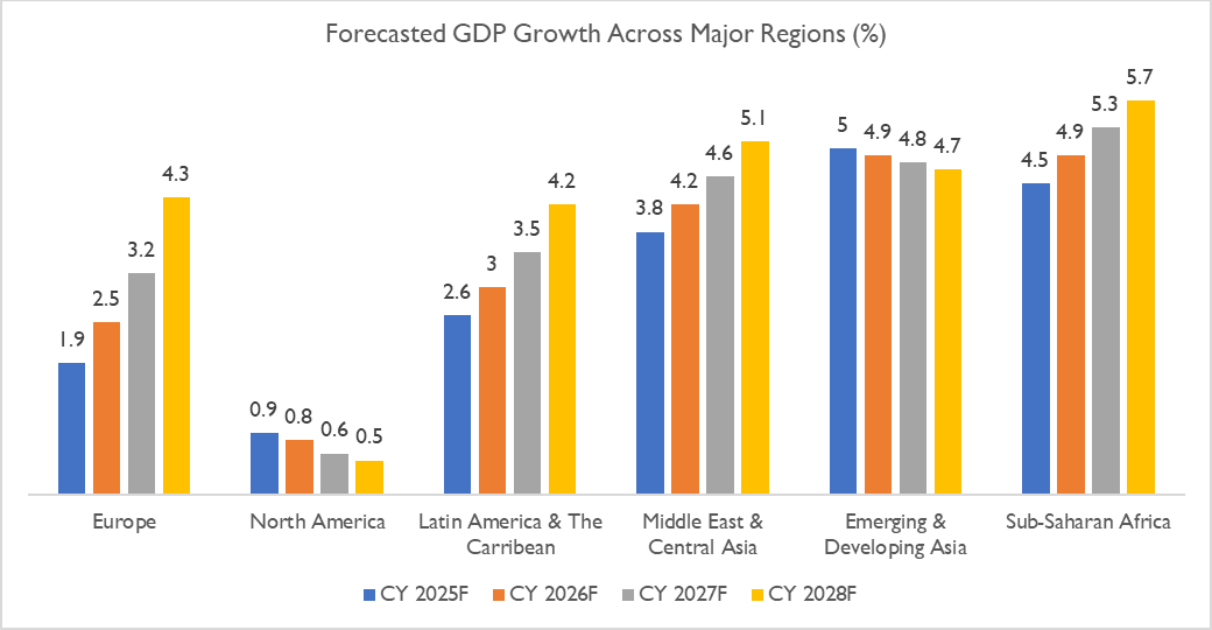
GDP growth of major regions including Europe, Latin America & The Caribbean, Middle East & Central Asia, and Sub-Saharan Africa, were showing signs of slow growth and recession between 2020 – 2023, but leaving Latin America & The Caribbean, 2024 is expected to show resilience and growth. Meanwhile, GDP growth in Emerging and Developing Asia (India, China, Indonesia, Malaysia etc.) is expected to decrease from 5.4% in CY 2023 to 5.2% in CY 2024, while in the United States, it is expected to decrease from 2.5% in CY 2023 to 2.1% in CY 2024.



Source-IMF World Economic Outlook January 2024 update

Except for Emerging and Developing Asia, Latin America & The Caribbean and the United States, all other regions are expected to record an increase in GDP growth rate in CY 2024 as compared to CY 2023. GDP growth in Latin America & The Caribbean is expected to decline due to negative growth in Argentina. Further, growth in the United States is expected to come down at 2.1% in CY 2024 due to lagged effects of monetary policy tightening, gradual fiscal tightening, and a softening in labour markets slowing aggregate demand.

Although Europe experienced a less robust performance in 2023, the recovery in 2024 is expected to be driven by increased household consumption as the impact of energy price shocks diminishes and inflation decreases, thereby bolstering real income growth. Meanwhile, India and China saw greater-than-anticipated growth in 2023 due to heightened government spending and robust domestic demand, respectively. Sub-Saharan Africa's expected growth in 2024 is attributed to the diminishing negative impacts of previous weather shocks and gradual improvements in supply issues.



Source-IMF, OECD, and World Bank, D&B Estimates

Global Economic Outlook

We are more optimistic about the global economy's prospects than we were at the onset of last year – and for good reason. The global economy avoided a widely anticipated recession in 2023 and will likely not see one in 2024. Looking at the current inflation trajectory, no one is guessing how much higher interest rates will go from here, which is a good outcome for both businesses and policymakers. Instead, financial markets are now betting on the timing and magnitude of rate cuts – and this is where we recommend caution for businesses. There are a few things to consider; first, rate cuts will likely follow an evident deterioration in economic conditions, i.e., after the economic damage is visible in data, which usually comes with a lag. By that logic, rate cuts by themselves may not be a positive outcome but only a means to offer relief from economic pain. Second, for most central banks that have been grappling with high inflation, higher expectations of rate cuts from financial markets will make them harder and riskier to deliver. Loosening too soon risks reversing

the inflation trajectory and if key central banks get their inflation projections wrong for a second time, it will only spell more trouble.

The violence that began in the Middle East on October 7 continues to escalate. Apart from Israel and the Palestinian territories, Yemen, Syria, Iraq, Jordan, Iran, and Pakistan have all become embroiled in some form of violence over the past four months, including cross-border fire. This can be largely attributed to the heavy presence of militias and terrorist groups in these countries. Consequently, security threat levels are elevated across the region and business operations are difficult. The most obvious impact on commercial activity has been on shipments passing through the Red Sea, which have been forced to re-route under attacks from Houthi rebel groups, elevating shipping costs and stretching delivery timelines. It has also added to volatility in the global energy markets. More importantly, the escalating conflict has reversed the gains made on global supply-side normalization and remains the biggest risk to hard-earned global disinflation – the two big economic accomplishments of 2023. Dun & Bradstreet's Global Supply Chain Continuity Index captured this dynamic as it fell 6.3% for Q1 2024, with suppliers' delivery time and delivery cost indices both deteriorating. In this context, for the global economy, a lot is riding on the ceasefire discussions that are currently underway between Israel and Hamas.

February marked the second anniversary of the start of the Russia-Ukraine conflict, which, at present, seems to be at a stalemate. From a business impact standpoint, events outside the zone of action, particularly in the EU, have gained more prominence than the conflict itself. These impacts range from immediate concerns about manufacturing performance, the cost of living, and energy security in the largest European economies, and go on to cover longer-term themes such as the bloc's first serious attempt at expansion in years, which includes Ukraine's bid for membership.

Geopolitical rumblings are also on the rise in the Asia-Pacific region, with North Korea issuing fresh threats, in words and in actions. Incessant saber-rattling may not necessarily lead to a conflict, but such posturing is unhelpful for the business and investment climates. In summary, geopolitics remains the biggest risk to the global economy today, dampening investments, disrupting supplies, and weakening the fight against inflation. There is one silver lining in all of this. High geopolitical temperatures around the world seem to have raised the stakes of stability for the U.S. and Mainland China. This was evidenced in their willingness to diffuse the Middle East, in keeping North Korea in check, and in Beijing's relatively muted reaction to a Democratic Progressive Party (DPP) victory in Taiwan Region's January 2024 polls. Mainland China may be keen to hold on to this new equilibrium until its economy fully stabilizes. As for the U.S., the outcome of the nomination races and the presidential election in November 2024 will be the key determinant of its foreign policy direction.

India Macroeconomic Analysis

GDP Growth Scenario

India's economy showed resilience with GDP growing at estimated 7.6% in FY 2024. The GDP growth in FY 2024 represents a return to pre pandemic era growth path. Even amidst geopolitical uncertainties, particularly those affecting global energy and commodity markets, India continues to remain one of the fastest growing economies in the world.

Country	Real GDP Growth (2023)	Projected GDP Growth 2024
India	7.8%	6.8%
China	5.2%	4.6%
Russia	3.6%	3.2%
Brazil	2.9%	2.2%
United States	2.5%	2.7%
Japan	1.9%	0.9%
Canada	1.1%	1.2%
Italy	0.9%	0.7%
France	0.7%[1]	0.7%
South Africa	0.6%	0.9%
United Kingdom	0.1%	0.5%
Germany	-0.3%	0.2%

Source: The International Monetary Fund

Countries considered include - Largest Developed Economies and BRICS (Brazil, Russia, India, China, and South)

Countries have been arranged in descending order of GDP growth in 2023).

There are few factors aiding India's economic recovery – notably its resilience to external shocks and rebound in private consumption. This rebound in private consumption is bringing back the focus on improvements in

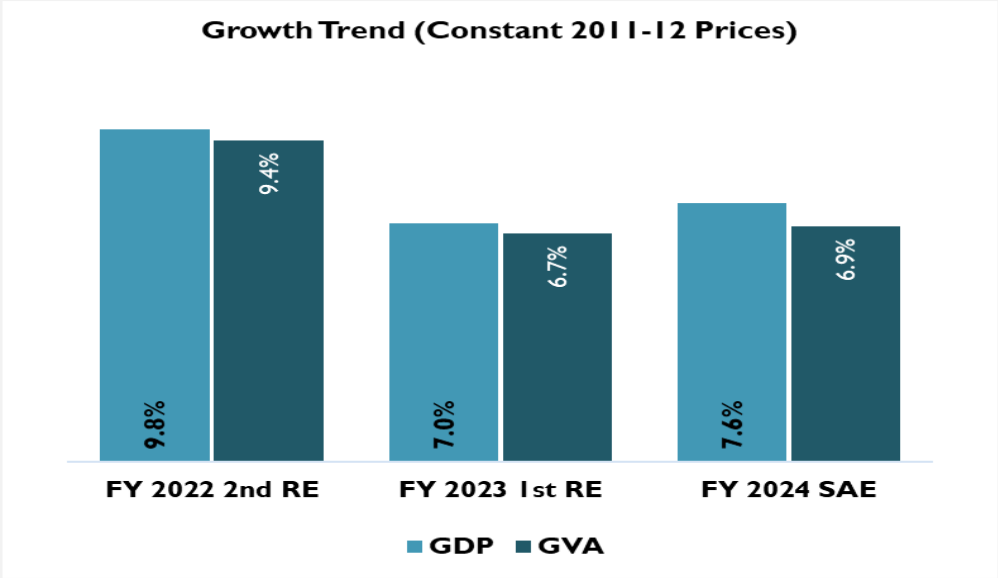
[1] European Commission

domestic demand, which together with revival in export demand is a precursor to higher industrial activity. Already the capacity utilization rates in Indian manufacturing sector are recovering as industries have stepped up their production volumes. As this momentum sustains, the country may enter a new capex cycle. The universal vaccination program by the Government has played a big part in reinstating confidence among the population, in turn helped to revive private consumption.

Realizing the need to impart external stimuli, the Government stepped up its spending on infrastructure projects which in turn had a positive impact on economic growth. The capital expenditure of central government increased by 37.4% increase in capital expenditure (budget estimates), to the tune of Rs 10 trillion in the Union Budget 2023-2024. The announcement also included 30% increase in financial assistance to states at Rs 1.3 trillion for capex. The improvement was accentuated further as the Interim Budget 2024-2025 announced an 11.1% increase in the capital expenditure outlay at Rs 11.11trillion, constituting 3.4% of the GDP. This has provided the much-needed confidence to private sector, and in turn attracted private investment.

On the lending side, the financial health of major banks has witnessed an improvement which has helped in improving the credit supply. With capacity utilization improving, there would be demand for credit from corporate sector to fund the next round of expansion plans. Banking industry is well poised to address that demand. Underlining the improving credit scenario is the credit growth to micro, small and medium enterprise (MSME) sector as the credit outstanding to the MSME sector by scheduled commercial banks in the financial year FY 2023 grew by 12.3% to Rs 22.6 trillion compared to FY 2022. The extended Emergency Credit Linked Guarantee Scheme (ECLGS) by the Union Government has played a major role in improving this credit supply.

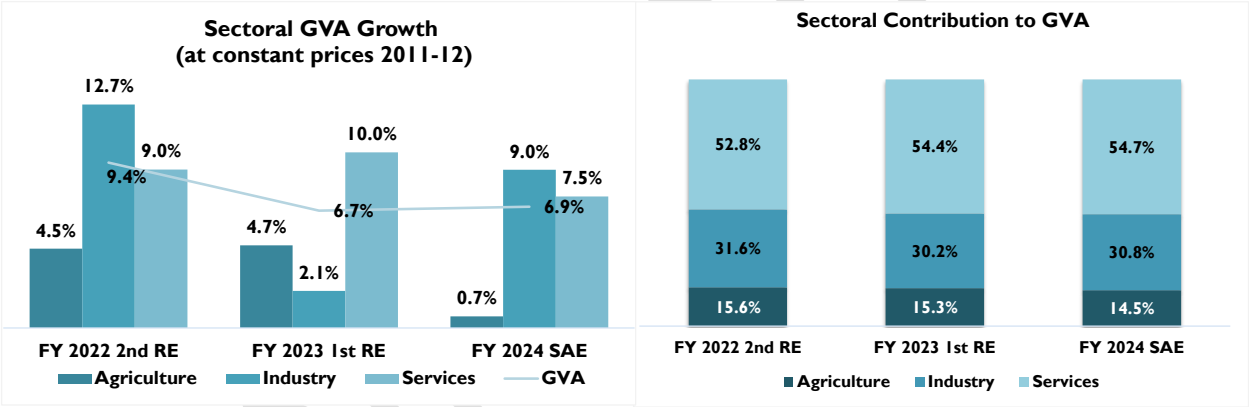
As per the second advance estimates 2023-24, India's GDP in FY 2024 grew by 7.6% compared to 7.0% in the previous fiscal on the back of solid performances in manufacturing, mining, and construction sectors. The year-on-year increase in growth rate is also partly due to by a strong growth in investment demand led by public capital expenditure.



Source: Ministry of Statistics & Programme Implementation (MOSPI), National Account Statistics, 2023-24

RE stands for Revised Estimates, SAE stands for Second Advance Estimates

Sectoral Contribution to GVA and annual growth trend



Source: Ministry of Statistics & Programme Implementation (MOSPI)

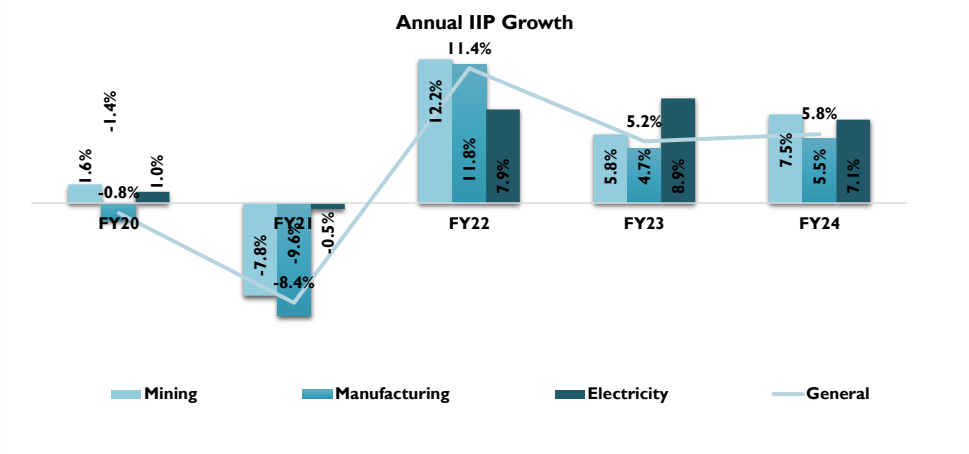
Sectoral analysis of GVA reveals industrial sector recovered sharply registering 9% y-o-y increase in FY 2024 against 2.1% in the previous fiscal. In the industrial sector, growth across major economic activity such as mining, manufacturing, construction sector rose significantly and it registered a growth of 8.1%, 8.5% and 10. 7% in FY 2024 against a growth of 1.9%, -2.20%, and 9.44% in FY 2023, respectively. Utilities sector observed a marginal moderation in y-o-y growth to 7.5% against a 10% in the previous years.

Talking about the services sectors performance, with major relaxation in covid restriction, progress on covid vaccination and living with virus attitude, business in service sector gradually returned to normalcy in FY 2023. Economic recovery was supported by the service sector as individual mobility returned to pre-pandemic level. The trade, hotel, transport, communication, and broadcasting segment continued to strengthen and grow by 10% in FY 2023 against 9% in the previous year. However, second advance estimates for FY 2024 reveal a decelerated growth in the largest component of the GDP, i.e., the service sector. In FY 2024, the sector registered a growth of 7.5%, as compared to the 10% growth recorded in FY 2023. This

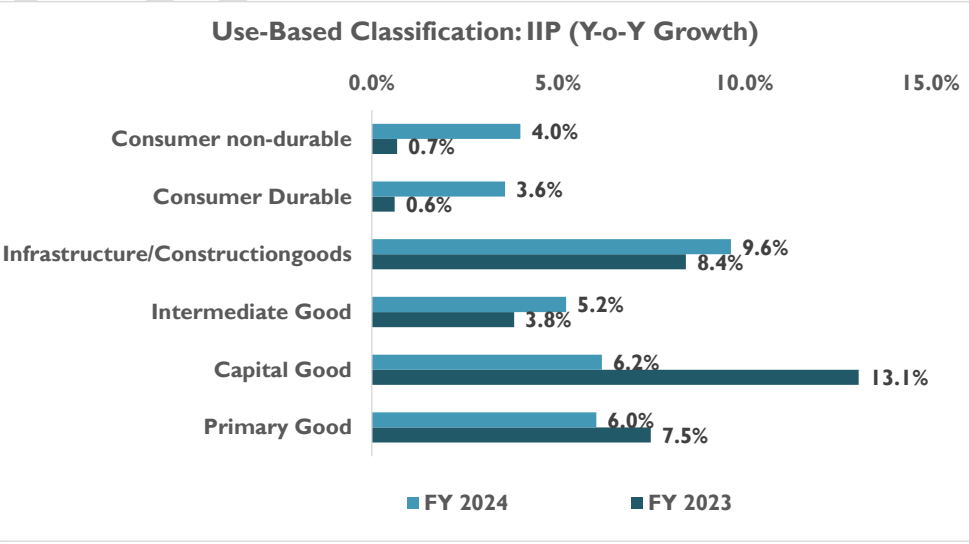
slowdown is primarily attributed to a pronounced deceleration in the Trade, Hotel, Transport, Communication, and Broadcasting services. The growth rate in this subsector nearly halved, decreasing from 12% in FY 2023 to 6.5% in FY 2024. This slowdown is influenced by the normalization of the base effect and potentially some dilution in discretionary demand. Financial services, real estate and professional services sector recorded 8.21% y-o-y growth against 9.05% y-o-y growth in the previous year, while public administration and defence services sector recorded 7.75% yearly increase against 8.92% increase in the previous year.

Index of Industrial Production

Industrial sector performance as measured by IIP index exhibited mild improvement in FY 2024 by growing at 5.8% (against 5.2% in FY 2023). Manufacturing index, with 77.6% weightage in overall index, grew by 5.5% in FY 2024 against 4.7% in FY 2023 while mining sector index too grew exhibited healthy improvement by growing at 7.5% against 5.8% in the previous years. Electricity sector Index witnessed improvement of 7.15% against 8.9% y-o-y growth in FY 2023.



Source: Ministry of Statistics & Programme Implementation (MOSPI)

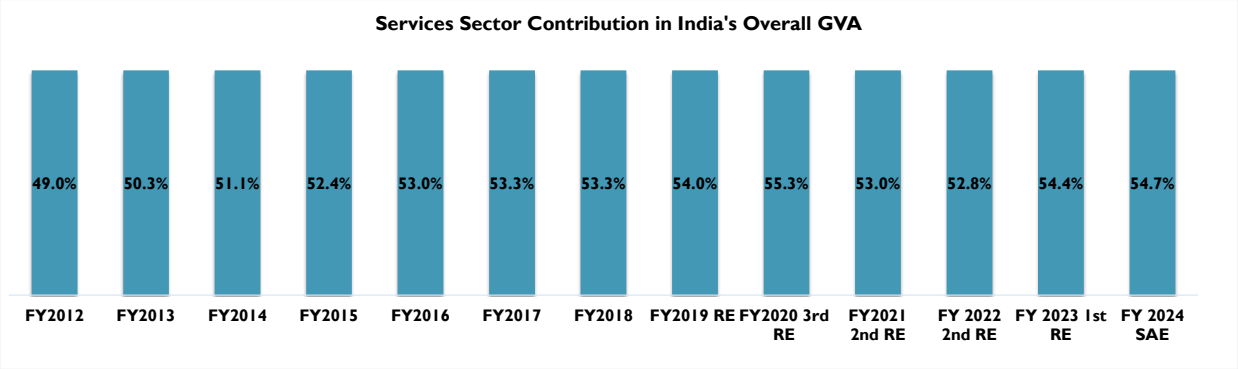


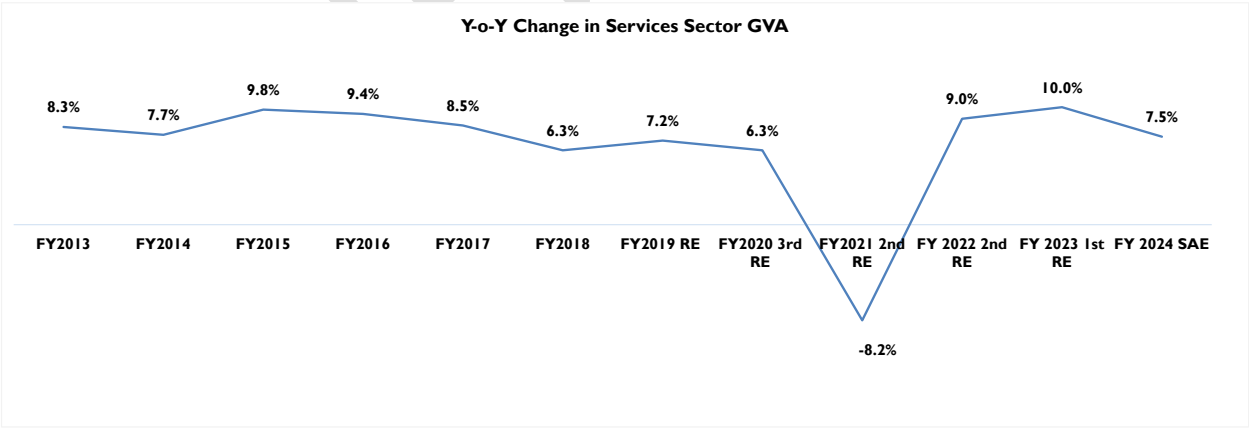
Sources: MOSPI

As per the use-based classification, excluding capital good and primary good, other segment observed healthy y-o-y growth against the previous year. Infrastructure / construction goods followed by intermediate goods were the bright spot while consumer non-durable and consumer durable both observed sharp growth over the previous year. However, the mild growth in IIP indicates towards challenging operating business climate as global headwinds, high inflation, and monetary tightening cumulatively impacted the broader industrial sector performance.

Expansion in Service Sector

Services sector is a major contributor to the country's overall economic growth. Since 2012, its contribution to India's GVA has increased from 49% to nearly 55% currently (in FY 2024) as per Second Advance estimates. While excluding 8.2% decline in FY 2021, the services sector GVA has observed average 8.2% growth between growth between FY 2013-24 and it has exhibited robust 8.8% average increase in the post pandemic period (FY 2022-24). The expansion of the service sector has spurred the development of multiple industries, including IT, healthcare, tourism, transport, and finance, among others.



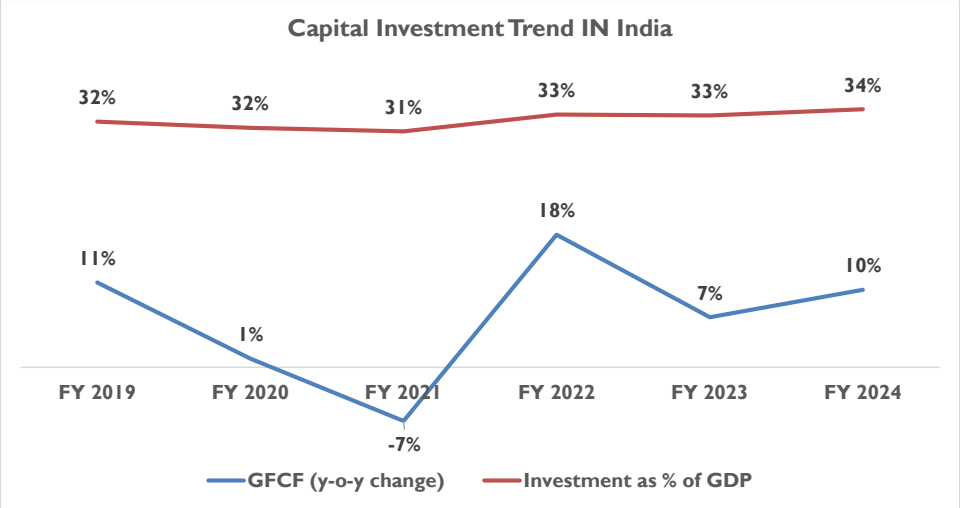


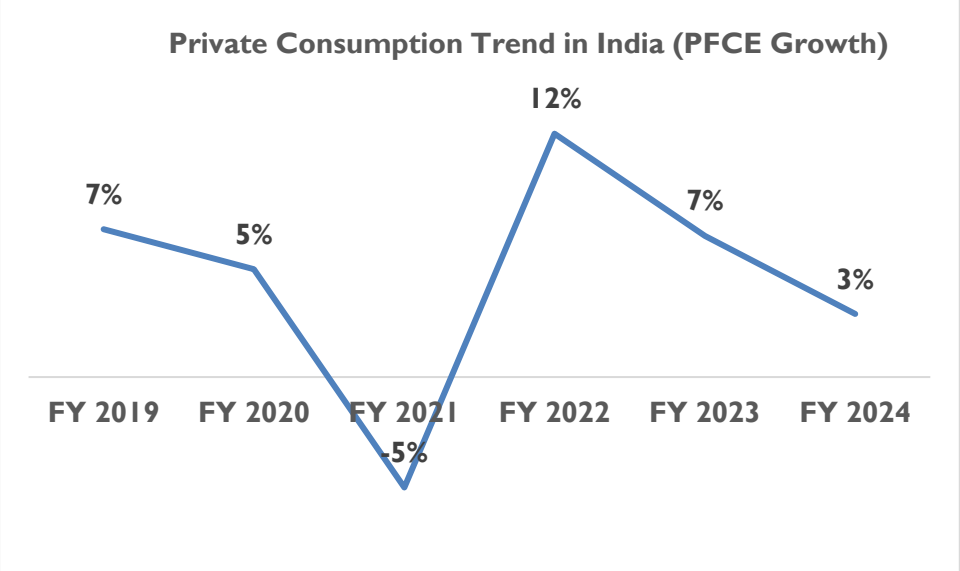
Source: Ministry of Statistics & Programme Implementation (MOSPI)

India's HSBC Services Purchasing Managers' Index**,** an important indicator to track service sector performance, increased to 61.4 in May 2024 from 60.8 in the previous month. Since August 2021, the services sector has consistently remained above the threshold of 50, which distinguishes growth from contraction.

Investment & Consumption Scenario

Other major indicators such as Gross fixed capital formation (GFCF), a measure of investments, gained strength during FY 2024 as it grew by 10% on y-o-y basis against 7% yearly growth in the previous fiscal, while GFCF to GDP ratio measured all time high settled higher at 34%.



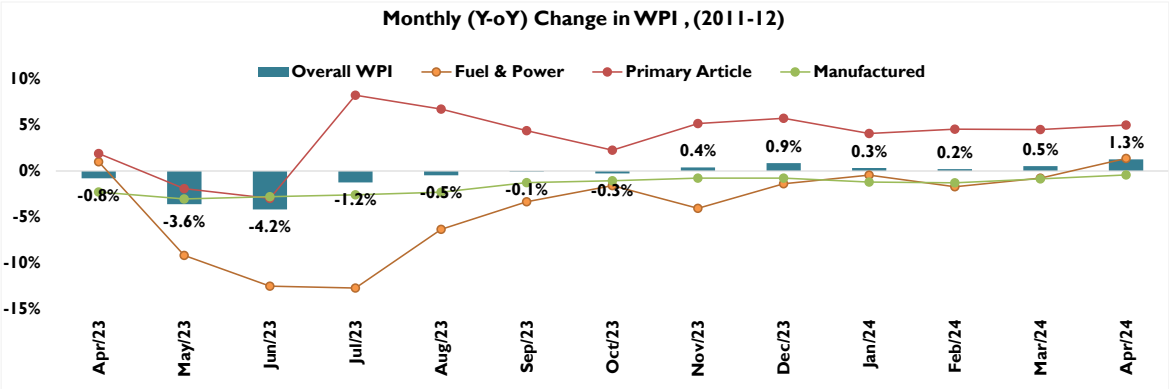


Sources: MOSPI

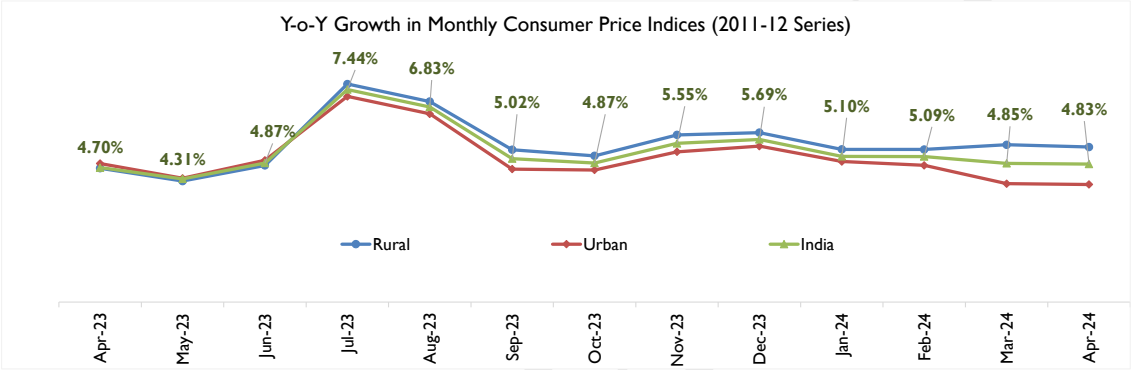
Private Final Expenditure (PFCE) a realistic proxy to gauge household spending, observed decelerated and registered 3.1% y-o-y growth in FY 2024 which is less than half of the previous year indicating sustained weakness in consumer spending.

Inflation Scenario

The inflation rate based on Wholesale Price Index (WPI) exhibited rose to1.3% in the month of April 2024 on the back of steady growth in the prices of primary article which grew by 5% in April 2024 on y-o-y bases. Increasing prices of food articles and energy prices contributed to increasing inflation.



Source: MOSPI, Office of Economic Advisor.

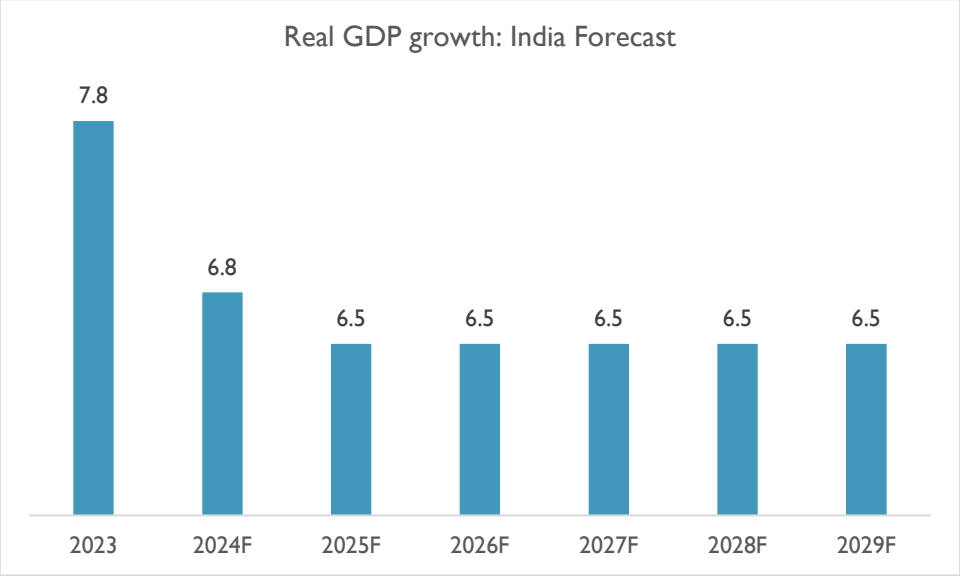


Source: CMIE Economic Outlook

Retail inflation rate (as measured by Consumer Price Index) eased to 4.83% in April 2024 as compared to 4.85% in March 2024. The CPI inflation for rural and urban for the month of April 2024 was 5.43% and 4.11% against 5.51% and 4.14% respectively in March 2024. Retail inflation moderated during FY 2024 after the peak of 7.4% in July 2023 and it fluctuated between 4.85%-6.83%. CPI measured below 6% tolerance limit of the central bank since September 2023. As a part of anti-inflationary measure, the RBI has hiked the repo rate by 250 bps since May 2022 to current 6.5% while it has been holding the rate at 6.5% since 8 Feb 2023.

India's Economic Growth Outlook

Looking ahead to 2024, India's projected GDP growth of 6.8% in 2024 stands out as the fastest among major emerging markets, significantly outpacing China's 4.6% and Brazil's 2.2%. This robust growth trajectory is expected to sustain at 6.5% annually from 2025 to 2029, reflecting strong economic fundamentals and continued momentum.



Source: IMF

This decent growth momentum in near term (2024) is accompanied by a slowdown in inflation, as well as various other factors in the medium to long term that will support the economy. These include enhancements in physical infrastructure, advancements in digital and payment technology, improvements in the ease of doing business and a higher quality of fiscal expenditure to foster sustained growth.

On the demand side, improving employment conditions and moderating inflation are expected to stimulate household consumption. Further, the investment cycle is gaining traction, propelled by sustained government capital expenditure, increased capacity utilisation and rising credit flow. Additionally, there are positive signs of improvement in net external demand, as reflected in the narrowing merchandise trade deficit. Despite the supply disruptions, exports clocked positive y-o-y growth in December 2023 and January 2024.

From uplifting the underprivileged to energizing the nation's infrastructure development, the Government has outlined its vision to propel India's advancement and achieve a 'Viksit Bharat' by 2047 in the interim budget announced on 1st Feb 2024. Noteworthy positives in the budget include achieving a lower-than-targeted fiscal deficit for FY24 and setting a lower-than expected fiscal deficit target for FY25, proposing dedicated commodity corridors and port connectivity corridors, providing long-term financing at low or nil interest rates to the private sector to step up R&D in the sunrise sectors.

Achieving a reduced fiscal deficit of 5.8% in FY24 and projecting a lower than-anticipated fiscal deficit of 5.1% are positive credit outcomes for India. This showcases the country's capability to pursue a high-growth trajectory while adhering to the fiscal glide path. There has been a significant boost to capital expenditure for two consecutive years; capital expenditure – which is budgeted at 3.4% of GDP (INR 11.1 trillion/USD 134 bn) for 2024/25 – is at a 21-year high (3.3% of GDP in 2023/24). The enhancement of port connectivity, coupled with the establishment of dedicated commodity corridors (energy, mineral and cement), is poised to enhance manufacturing competitiveness. This strategic move aims to fulfil India's export targets and reduce logistics costs.

However, headwinds to external demand emanate from recession in key exporting partners - the UK and Germany (which collectively account for over 5% of India's export portfolio) - and the spiralling effect it will have on other European countries. Supply disruptions posed by the conflict in the Red Sea, leading to rerouting of shipments through Africa, are impacting sectors exposed to exports to Europe, running on thin margins, especially small businesses. Although headline inflation moderated to 5.1% in January 2024, a three-month low, volatility in crude prices and uncertainties about food inflation are likely to keep the central bank cautious in the near term.

India's optimistic economic outlook is underpinned by its demographic dividend, which brings a substantial workforce that boosts labor participation and productivity. The burgeoning middle class and urbanization contribute to increased domestic consumption, driven by rising incomes and purchasing power. Extensive investments in infrastructure, encompassing roads, railways, ports, and digital connectivity, are enhancing productivity and efficiency, with government initiatives like the Smart Cities Mission and PM Gati Shakti creating a conducive growth environment. This digital transformation, catalyzed by initiatives such as Digital India, is fostering a tech-driven economy marked by enhanced internet penetration, digital payments, and e-governance, thereby fueling growth in sectors like fintech, e-commerce, and digital services. The push to position India as a global manufacturing hub through Make in India and PLI schemes is further boosting industrial output, exports, and domestic production capabilities. Compared to other major emerging markets facing demographic and economic challenges, India's combination of demographic strengths, policy reforms, and strategic initiatives positions it as a standout performer and a significant driver of global economic growth in the foreseeable future.

Some of the key factors that would propel India’s economic growth.

Government focus on infrastructure development & Road Infrastructure Improvement

Infrastructure development has remained recurring theme in India’s economic development. The launch of flagship policies like National Infrastructure Pipeline (NIP), and PM Gati Shakti plan have provided the coordination & collaboration that was lacking earlier. Both NIP and PM Gati Shakti are ambitious billion-dollar plans that aim to transform India’s infrastructure, elevating it to the next level. These projects are expected to improve freight movement, debottleneck the logistics sector, and improve the industrial production landscape, which would provide the incremental growth in GDP India's growing economic activities are propelling the development and expansion of road infrastructure across the nation. As the Indian economy continues its robust growth trajectory, it relies heavily on the presence of efficient transportation networks to facilitate the movement of goods and people. Roads play a vital role in opening areas and stimulating economic and social development and growth of several allied industries including lithium-ion batteries application in several sector.

Development of Domestic Manufacturing Capability

The Government launched Production Linked Incentive (PLI) scheme in early 2020, initially aimed at improving domestic manufacturing capability in large scale electronic manufacturing and gradually extended to other sectors. At present it covers 14 sectors, ranging from medical devices to solar PV modules. The PLI scheme provides incentives to companies on incremental sales of products manufactured in India. This incentive structure is aimed to attracting private investment into setting up manufacturing units and thereby beef up the domestic production capabilities. The overall incentives earmarked for PLI scheme is estimated to be INR 2 lakh crore. If fully realizing the PLI scheme would have the ability to add nearly 4% to annual GDP growth, by way of incremental revenue generated from the newly formed manufacturing units.

Strong Domestic Demand

Domestic demand has traditionally been one of the strong drivers of Indian economy. After a brief lull caused by Covid-19 pandemic, the domestic demand is recovering. Consumer confidence surveys by Reserve Bank / other institutions are points to an improvement in consumer confidence index, which is a precursor of improving demand. India has a strong middle-class segment which has been the major driver of domestic demand. Factors like fast paced urbanization and improving income scenario in rural markets are expected to accelerate domestic demand further. This revival is perfectly captured by the private final consumption expenditure (PFCE) metric. PFCE as a percentage of GDP increased to nearly 59.2% during the first half of FY 2023F[2], which is the highest level it has achieved during the past few years. Although pent-up demand has played a part in this surge, this is an indication of normalization of demand. There are two factors that are driving this domestic demand: One the large pool of consumers and second the improvement in purchasing power. As per National Statistics Office (NSO) India's per capita income (in current prices) stood at INR 1.72 lakhs in FY 2023 which is nearly double of what it was in FY 2015. This increase in per capita income has impacted the purchasing pattern as well as disposable spending pattern in the country. Consumer driven domestic demand is majorly fueled by this growth in per capita income.

Digitization Reforms

Ongoing digitization reforms and the resultant efficiency gains accrued would be a key economic growth driver in India in the medium to long term. Development of digital platforms has helped in the seamless roll out of initiatives like UPI, Aadhaar based benefit transfer programs, and streamlining of GST collections. All of these have contributed to improving the economic output in the country. Some of the key factors that have supported the digitization reforms include – the growth in internet penetration in India together with drop in data tariffs, growth in smartphone penetration, favourable demographic pattern (with higher percentage of tech savvy youth population) and India's strong IT sector which was leveraged to put in place the digital ecosystem. All these factors are expected to remain supportive and continue to propel the digitization reforms in India.

[2] India Economic Survey FY 2023, Full year data is yet to be released.

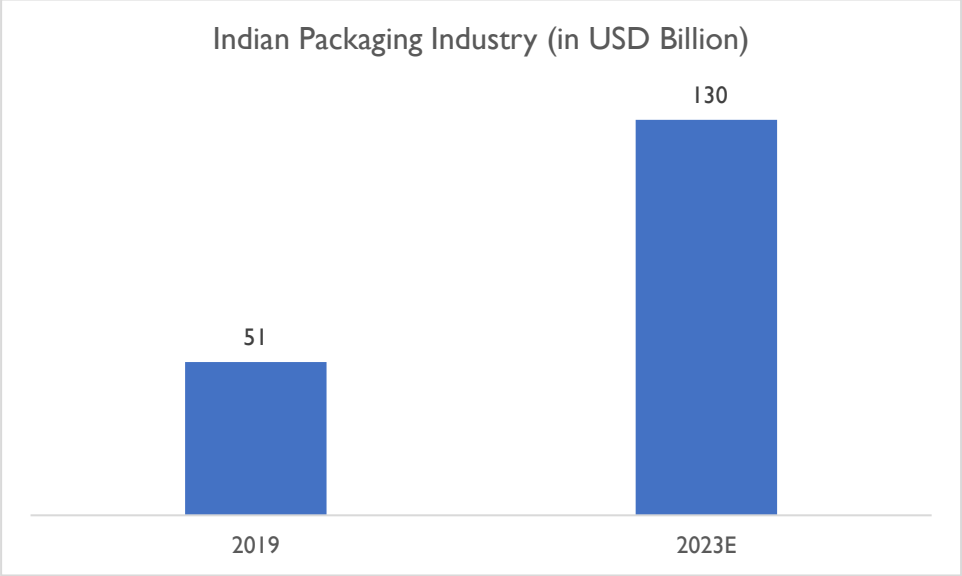
Increased adoption of digital technology and innovation, inclusive and sustainable practices, business-friendly and transparent regulations, and heightened corporate research and development (R&D) investments will further bolster the country's growth. These factors will collectively support employment growth across both private and public sectors, including micro, small, and medium enterprises (MSMEs).

Indian Packaging Industry

Overview

According to the Economic Survey 2022-23, India ranks as the world's third-largest economy in PPP terms and the fifth largest in terms of GDP. The substantial economic size has created fresh business prospects globally, particularly in the packaging industry. The Indian packaging sector, witnessing significant growth, benefits from its presence across various industrial segments and the evolving trade landscape, including the rise of e-commerce and organized retailing. The demand for secure packaging solutions has surged with the growth of e-commerce, emphasizing the crucial role of packaging in preserving product integrity during transit, supported by robust logistics and distribution networks.

The packaging industry is one of the largest economic sectors in the country, and it is estimated that Indian packaging industry accounts for approximately 10 to 15% of the global packaging industry. The India Packaging Market, valued at USD 50.5 billion in 2019, is estimated to have reached USD 130.14 billion by 2023, experiencing a compounded annual growth rate of 26.7% from 2019 to 2023. This reflects the robust growth of the packaging sector in India, expanding at a rate of 23-28% annually and establishing itself as a preferred hub for the packaging industry.



Source: Packaging Industry Association of India, D&B Reserch

The industry has undergone notable transformations over the past two years amid the pandemic. Throughout different phases of the pandemic, diverse companies in the packaging sector have embraced emerging trends. These trends encompass smart, sustainable, and secure packaging, infused with innovation and artistic elements. These packaging trends have gained significant prominence across various industries, including food, pharmaceuticals, beverages, cosmetics, and other FMCG.

Major global FMCG players have declared a gradual shift toward sustainable packaging. Industries such as pharmaceuticals, food processing, and personal care are experiencing substantial growth, driven by significant

investments from large multinational corporations. This surge has led to the development of cost-effective and eco-friendly packaging solutions, contributing to the expansion of the packaging sector.

As the 5th largest sector in India's economy, the packaging industry has demonstrated consistent growth in recent years, indicating substantial potential for further expansion. Noteworthy exports from the industry include flattened cans, printed sheets, crown cork, lug caps, plastic film laminates, kraft paper, paperboard, and packaging machinery. With processing and packaging costs for food being up to 40% lower than certain European regions, coupled with India's skilled labour resources, the country emerges as an attractive investment destination.

Government initiatives like 'Make in India' and the implementation of Goods and Services Tax (GST) have played a role in streamlining supply chains, positively impacting the packaging sector. Furthermore, technological advancements, such as smart packaging and anti-counterfeiting measures, are becoming integral to enhancing product safety and engaging consumers.

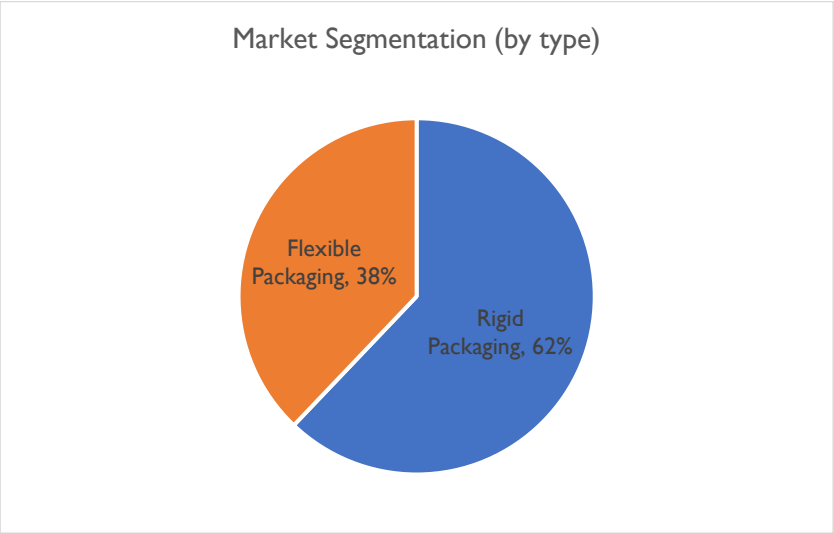
As the Indian packaging industry continues to adapt to evolving market dynamics, it remains a key player in supporting the growth and competitiveness of various sectors in the country.

Market Segmentation

The packaging sector is divided into two categories i.e rigid and flexible.

Rigid Packaging	Flexible Packaging
Wood based packaging. Metal packaging Glass packaging Paper (corrugated paper) packaging Rigid plastic packaging	Plastic film-based packaging (polymer film-based packaging products) Cellophane

Currently, Indian packaging sector is dominated by rigid packaging segment. However, the penetration of flexible packaging materials is increasing steadily. The flexibility in transportation and storage along with superior barrier properties is helping in the growth of flexible packaging materials. With demand for products like packaged food and personal care products increasing, usage of flexible packaging materials – which is the preferred packaging material in food & beverage industry – would increase.



Source: D&B Research

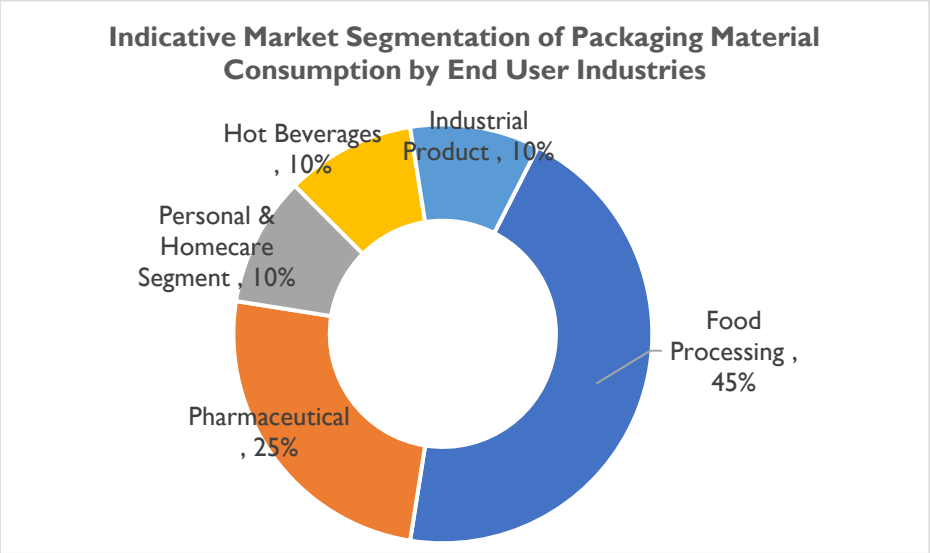
The rigid segment, comprising 62% of India's overall packaging, the rigid sector encompasses materials like glass, metal, paper and cardboard, and rigid plastics such as PET, HDPE, and PVC for containers and packaging. These materials offer durability, quality, and protection for various products. These materials ensure that products remain secure during transportation, offer barrier properties to protect against external factors, and contribute to the overall sustainability of the packaging industry through recyclability and reusability initiatives. The rigid packaging sector continually evolves to meet industry trends and consumer demands for efficient and environmentally friendly packaging solutions.

In contrast, constituting 38% of the total packaging sector, **the flexible packaging sector** employs a variety of materials, including flexible plastics, paper, foil, and combinations of these, to create versatile packaging solutions. Flexible packaging involves packaging using plastic/polymer sheets such as biaxial oriented polypropylene (BOPP), metalized BOPP films, films made from polyethylene, polyvinyl chloride, and cellophane. Flexible packaging materials can be manufactured through three techniques: blown film manufacturing, cast film manufacturing, and co-extrusion process. This sector is characterized by its lightweight design, cost-effectiveness, and adaptability to different shapes, making it suitable for a diverse range of products. Flexible packaging is widely utilized for items such as snacks, coffee, frozen foods, and pet food. It actively contributes to sustainability efforts through the development of recyclable and compostable materials.

Market Segmentation by Use

Packaging is a critical element across industries, serving as a tool that goes beyond merely protecting products. It plays a pivotal role in ensuring product safety, maintaining brand identity through distinctive designs and labels, enhancing consumer convenience with ergonomic features, and complying with regulatory standards. Demand primarily comes from sectors like Processed food packaging(including Alcoholic & Non Alcoholic beverages), Personal Care products packaging, Pharma packaging, FMCG, Tobacco, and others. Pharmaceuticals, Processed food, and Personal Care products. Based on end user industries, the packaging

material consumption is highest in food processing followed by pharma, personal and home care product, hot beverages segment and industrial products.



Sources: D&B Research, Industry Sources

Food Packaging:

Food packaging serves a dual purpose of preserving the freshness and quality of edibles while also acting as a marketing tool. The utilization of vacuum packaging modified atmosphere packaging (MAP), and barrier coatings helps in extending the shelf life of perishable items. Labels and graphics on packages not only provide essential information like nutritional details but also contribute to brand recognition, making packaging a pivotal aspect of consumer trust and satisfaction.

Healthcare Packaging:

Healthcare packaging is all about ensuring the safety and efficacy of pharmaceuticals and medical devices. Tamper-evident seals, sterile packaging, and child-resistant closures are critical features. Compliance with regulatory standards is a non-negotiable aspect, and packaging plays a pivotal role in meeting these requirements. It goes beyond containment, becoming an essential component in patient safety and well-being.

Beverage Packaging:

The beverage industry relies on packaging for practicality and branding. PET bottles, cans, glass containers, and cartons are designed for convenience and visual appeal. The packaging not only protects the liquid contents but also acts as a medium for brand messaging and differentiation. Ergonomic designs, tamper-evident seals, and eco-friendly materials are key considerations in beverage packaging.

Personal Care Product Packaging:

Packaging for personal care products goes beyond functionality to encompass aesthetics. Bottles, tubes, and jars are designed for ease of use and often feature innovative dispensing mechanisms. Premium materials,

unique shapes, and visually appealing designs contribute to the product's perceived value. Packaging in this sector is a crucial element in establishing brand identity and attracting consumers in a competitive market.

Industrial Packaging:

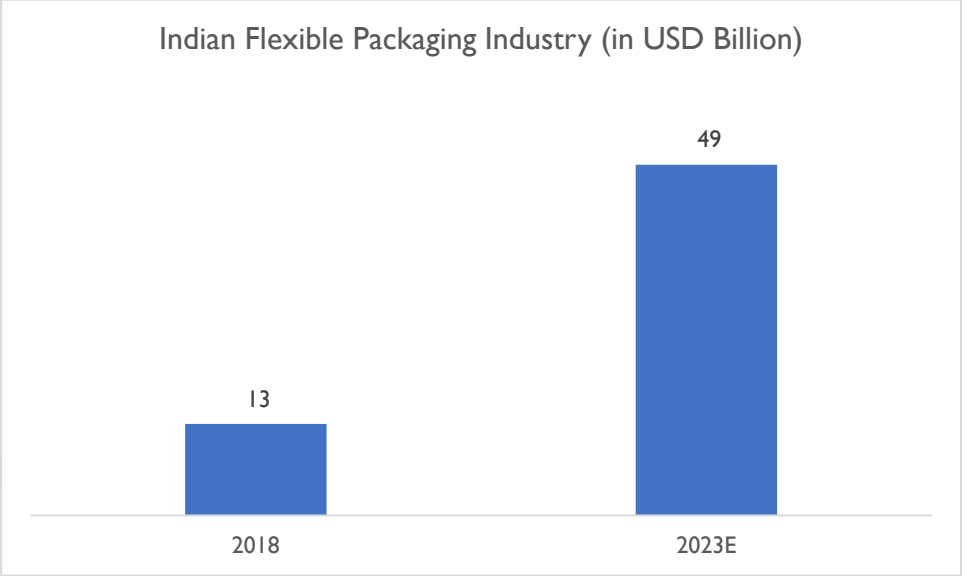
Industrial packaging is focused on the logistics of transporting and storing bulk materials, machinery, and components. Robust materials like corrugated boxes, steel containers, and specialized crates are chosen based on the durability required. The packaging ensures that industrial products reach their destination without damage, contributing to supply chain efficiency and overall cost-effectiveness.

Indian Flexible Packaging Industry

Flexible packaging involves packaging products using non-rigid materials, providing more cost-effective and customizable options. This approach utilizes a range of flexible materials such as foil, plastic, and paper to craft pliable containers like pouches and bags. Film, plastic, paper, foil, and other materials can be employed to create flexible packaging solutions.

Flexible packaging stands out as one of the rapidly growing sectors within the packaging industry, bringing added value and marketability to both food and non-food products. It combines the desirable features of plastic, film, paper, and aluminum foil to offer a wide array of protective properties while minimizing material usage. The industry is continuously progressing at an unprecedented pace, with innovation and technological advancements leading to the creation of lighter weight packaging that enhances shelf appeal, strength, product protection, and seal ability. Various instances of innovation in flexible packaging stem from the idea of prolonging the freshness of food item, reducing shipping costs, and ensuring safer consumption of medicines. With its adaptability, customizable attributes, resource efficiency, and sustainability, now is an opportune time to consider transitioning to flexible packaging.

According to industry sources, the Indian flexible packaging market valued at USD 12.92 billion and is estimated to have reached USD 49 billion in 2023. Further, the industry is estimated to grow at a CAGR of 12.6% between 2022 and 2027. This surge is mainly attributed to the increasing demand for packaged food, driven by the product's convenience and cost-effectiveness.



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Advantages of Flexible Packaging

Lightweight	•Flexible packaging materials, such as thin films and pouches, are inherently lightweight. This characteristic reduces transportation costs as less energy is required for shipping, and it contributes to a lower carbon footprint.
Space Efficiency	•The flexibility of packaging materials allows for efficient use of storage space during transportation and on store shelves. This is particularly beneficial in crowded retail environments where maximizing shelf space is crucial.
Versatility	•Flexible packaging can be tailored to fit a variety of shapes and sizes. This adaptability makes it suitable for diverse product types, from liquids like beverages to solids like snacks.
Extended Shelf Life	•Flexible packaging often incorporates barrier properties that protect products from external elements such as moisture, oxygen, and light. This protection helps preserve the freshness and quality of perishable goods, extending their shelf life.
Cost-Effectiveness	•The production costs of flexible packaging are generally lower compared to rigid alternatives. This cost efficiency is partly due to the use of less material and the streamlined manufacturing processes.
Reduced Material Usage	•Flexible packaging typically requires less material than rigid packaging, contributing to resource efficiency and minimizing waste. This is particularly relevant as industries strive to adopt more sustainable practices.
Printability	•Flexible packaging materials provide a smooth and printable surface, allowing for vibrant graphics, detailed product information, and branding. This enhances the visual appeal of products on store shelves.
Convenience	•Flexible packaging often features user-friendly elements such as resealable zippers, spouts, and easy-open designs. These conveniences enhance the overall user experience, promoting repeat purchases and reducing product waste.
Eco-Friendly Options	•With a growing emphasis on sustainability, manufacturers are developing eco-friendly flexible packaging options. This includes materials that are recyclable, compostable, or made from renewable resources, addressing environmental concerns.

Market Structure

The flexible packaging market is categorized into three main segments: by packaging material, by the type of flexible packaging, and by applications.

Packaging Materials	Type of Flexible Packs Used	Area of Application
Polyethylene, Polyvinyl Chloride (PVC), Polyethylene Terephthalate (PET, PETE) Polypropylene (PP) BOPP, Metallized BOPP & BOPET,	Laminates Shrink sleeves. Pouches, Wraparound labels Zip bags	Food Packaging, Processed food product including snacks, ready to eat food product etc. Pharmaceutical Packaging Personal Care Product Packaging Agricultural Packaging (Food Grains) Industrial Packaging (Fertilizers, Cement)

By Packaging Material

The market structure of flexible packaging is diverse, encompassing a range of materials that cater to specific industry needs. Flexible packaging can be composed of various materials, including film, plastic, paper, or foil.

- **Polyolefin (POF**), characterized by its heat-shrink properties, finds applications in shrink wraps and packaging films. Low Density Polyethylene (LDPE) and Linear Low-Density Polyethylene (LLDPE) offer flexibility and durability, making them suitable for a wide array of packaging solutions.
- **Polyethylene Terephthalate (PET, PETE),** known for its clarity and strength, is commonly used in beverage bottles and food packaging.
- **Polypropylene (PP)** provides a balance between transparency and stiffness, making it ideal for packaging snacks and confectionery. Polyvinyl Chloride (PVC, Vinyl) offers versatility and is utilized in various applications, including pharmaceutical packaging.

The market structure is characterized by the dynamic interplay of these materials, each bringing distinct properties to the flexible packaging industry, catering to the diverse needs of sectors such as food and beverage, healthcare, and consumer goods. This diversity ensures that flexible packaging remains a versatile and adaptive solution in the packaging landscape.

By Type

The flexible packaging market structure is characterized by a diverse array of packaging types, each tailored to meet specific industry needs and consumer preferences.

Pouches	•Pouch packaging dominates the market, offering a flexible and versatile solution. Stand-up pouches, flat pouches, and spouted pouches are widely utilized, providing convenience and visual appeal. They find applications in sectors ranging from food and beverages to personal care product.
Bags	•Bags, in various forms such as flat bags, gusseted bags, and resealable bags, are prevalent in the market. Used for packaging snacks, confectionery, and bulk items, bags provide practical and cost-effective solutions.
Wraps and Films	•Wraps and films serve as essential components, offering flexibility in packaging shapes and sizes. These materials are used in the packaging of fresh produce, meats, and various consumer goods, providing protection and visibility.
Labels and Sleeves	•Labels and sleeves play a crucial role in branding and product information. Particularly prominent in the beverage industry, these flexible packaging elements provide an avenue for visual appeal and differentiation on store shelves.
Seals and Closures	•Seals and closures are integral to maintaining product freshness and integrity. Zipper closures, spouts, and heat-sealed closures are common mechanisms across various packaging formats, contributing to consumer convenience and reusability.
Tubes	•Flexible tubes are prevalent in the personal care and pharmaceutical industries, providing precise dispensing for products such as creams, lotions, and gels. Their adaptability and hygienic design make them a staple in these markets.
Sachets	•Sachets, small and sealed packets, are popular for single-use portions of products like condiments, instant beverages, and cosmetics. Widely employed for on-the-go consumption, sachets contribute to product accessibility and convenience.
Liners and Laminates	•Liners and laminates, created by combining multiple materials, act as barriers against external elements. Commonly used in food packaging, they extend shelf life and preserve product freshness.
Lidding Films	•Lidding films are crucial in sealing trays or containers, preserving the quality of ready-to-eat meals and dairy products. Their use ensures tamper resistance and enhances product safety.

This diverse landscape within the flexible packaging market reflects the adaptability of the industry to a broad spectrum of products and consumer demands. Manufacturers continually innovate to introduce sustainable

materials and designs, ensuring that flexible packaging remains a dynamic and widely embraced solution across industries.

By Application

Flexible Packaging Industry

The flexible packaging industry's market structure, when segmented by application, reflects its diverse and widespread influence across various sectors. The primary applications include:

Food and Beverages: Flexible packaging plays a pivotal role in the food and beverage industry providing solutions such as pouches, wraps, and seals. It ensures product freshness, extends shelf life, and offers convenient packaging for a wide range of food item such as snacks item, ready to eat food products, confectionary food item, bakery product and frozen food product amongst others,

Personal Care Products: The personal care industry extensively utilizes flexible packaging for products like lotions, creams, shampoos, and cosmetics. Tubes, pouches, and sachets are common formats that provide convenience and hygiene in product dispensing.

Pharmaceuticals: In the pharmaceutical sector, flexible packaging ensures the safety and integrity of medicines and medical devices. Packaging materials like films and foils create a protective barrier, complying with regulatory standards and preserving the efficacy of healthcare products.

Industrial Applications: Flexible packaging is employed in various industrial applications, providing solutions for packaging bulk materials, components, and machinery. Robust materials and versatile formats contribute to efficient storage and transportation.

E-commerce and Mailing: With the rise of e-commerce, flexible packaging has become crucial for shipping and mailing purposes. Envelopes, bags, and protective films play a significant role in ensuring the safe and secure delivery of products.

Labels and Branding: Labels, sleeves, and other flexible packaging elements are integral for branding and information dissemination. Industries, particularly beverages, leverage flexible packaging to enhance product visibility, communicate brand identity, and comply with labelling regulations.

Others: The flexible packaging industry extends its influence into various other applications, including pet care products, household goods, and more. The adaptability of flexible packaging allows it to cater to a broad spectrum of consumer and industrial needs.

This segmentation by application shows the versatility of flexible packaging, making it a cornerstone in the packaging landscape across diverse sectors. From ensuring food safety to providing innovative solutions for personal care and pharmaceuticals, flexible packaging continues to evolve to meet the evolving demands of different industries.

Indian Flexible Packaging Machinery

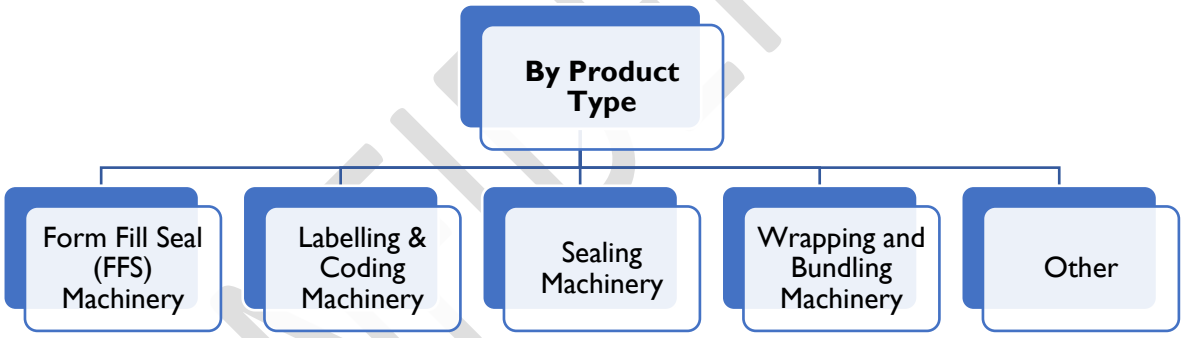
Overview

The Indian packaging machinery sector is undergoing significant growth, driven by increased demand from diverse industries and advancements in technology. Packaging machinery is the backbone of modern packaging, ensuring efficiency, productivity, and the delivery of high-quality packaging solutions. With the rapid growth of industries in India, the demand for innovative and reliable packaging solutions has surged.

To meet this demand, several packaging machine manufacturers in India have emerged, offering state-of-the-art machinery that streamlines packaging processes and enhances productivity. This industry is shaped by factors such as industry expansion, technological advancements, and a growing emphasis on sustainable packaging practices. The packaging machinery segment can be categorized in two types: **By Product Type** or by **End user industry.**

Market Segmentation by Product Type

On the basis of product type, the Indian packaging machinery sector can be broadly segment into following categories:



Form Fill Seal (FFS) Machinery

Form fill seal packaging machines are automated packaging devices that shape the package, load it with the contents intended, and securely seal it. These machines primarily utilize flexible film to create the main packaging, like pouches or bags. However, the FFS technology also extends to producing aseptic cartons.

These packaging machines operate by unwinding a reel of flexible material, which can be paper, film, or laminates combining paper, film, and foil. Subsequently, they either shape it into a tube and seal and fill it at regular intervals or fold it lengthwise, sealing it at right angles to the fold. This process forms a series of pockets that are then filled and closed.

FFS machines can be broadly categorized into two types:

Vertical Form Fill Seal (VFFS) Machines

Vertical Form Fill Seal (VFFS) machines represent versatile automated assembly-line packaging systems utilized in the food industry and various sectors for efficient and proficient packaging. These machines manufacture plastic bags from a flat roll of film, concurrently filling and sealing the bags. VFFS machines are capable of packaging both solids and liquids.

The applications of VFFS machines extend to packaging a diverse range of products, including Bulk goods, spanning from nuts and cookies to bolts and screws, Powders like ground coffee and dehydrated milk, Grains or granules, and Liquids, typically in single-use or portion-sized packages, such as ketchup, mayonnaise, salad dressing, or bath gel.

Horizontal Form Fill Seal (HFFS) Machines

Horizontal Form Fill Seal (HFFS) machines are commonly used for non-flowable solid items, featuring two moulding and sealing stations for seamless size transitions without downtime. This design proves advantageous in factories requiring frequent changeovers. The machine, comprising a Product Filler and HFFS Bagging Unit, utilizes various fillers (Liquid/Paste, Solids, Powders & Granules) to precisely dispense the product.

HFFS packaging machines are preferred for fragile products and when customers request stand-up pouches, zipper-equipped pouches, or those with spouts for easy access. Many companies opt for FFS systems due to their inherent benefits, such as speed and versatility in packaging various products efficiently.

Labelling and Coding Machinery

Labelling and Coding technology are employed to affix identifying marks or codes to products throughout the manufacturing or supply chain processes. This may include date codes for best before or use-by dates, unique alphanumeric combinations indicating batches, primary or product barcodes for retail identification, and labels on cartons or pallets for group identification.

Labelling machinery encompasses equipment dedicated to printing and affixing labels onto products. Its applications are widespread, given that most commercial products feature labels on the item and its packaging. These machines extend their functionality to creating labels for cartons, cases, and pallets. The versatility of labelling machines is evident in their ability to generate simple barcodes, 2D codes, batch codes, expiration dates, as well as intricate texts, graphics, images, and logos.

Labelling machines are classified based on their specific roles in the labelling process, encompassing printing, dispensing, and attaching functions. Typical labelling machinery often combines these types:

- **Label dispensers:** These machines solely apply pre-printed labels onto packaging and products. Labels are typically produced by a separate printing machine and then loaded into the dispenser for application.
- **Label printers and dispensers**: This category not only applies labels but also produces them. Essentially, it combines the functionalities of a label printer and a label dispenser into a single machine.

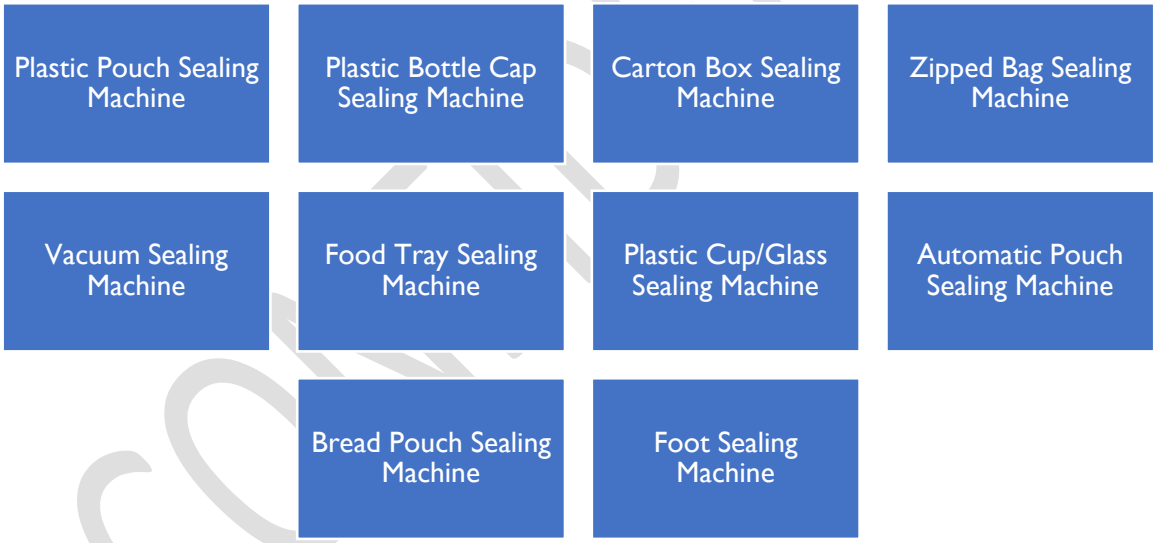
Coding equipment is employed to imprint dates, numbers, and other information directly on labels or, in some cases, directly on bottles or containers. This equipment includes hot stamp coders, ink jet printers, and laser coding devices. Hot stamp coders can be attached to labelling machines, utilizing a heated plate and changeable characters for imprinting information on each label.

Ink jet printers and laser coders offer higher speeds and increased print space. Ink jet coders allow non-contact printing on various surfaces, including labels, bottles, cartons, and boxes. Laser coders, like ink jet printers, operate without contact and require no ink or foil, enabling detailed printing of dates, lot numbers, logos, pictures, and more.

Sealing Machinery

Sealing machines serve the purpose of securely sealing containers containing liquids, granules, powders, and sprays intended for consumer use, bulk shipments, and original equipment manufacturer (OEM) supplies. The range of packaging materials encompassed includes aerosol containers, bags, pouches, blister packs, bottles, jars, cartons, and boxes. Certain suppliers of sealing machines also offer complementary packaging equipment, such as accumulators, batching machines, bagging machines, banders, sleevers, and box-making equipment.

Different types of Sealing Machine are-



Wrapping and Bundling Machines

A bundling machine is specifically designed for packaging applications utilizing polyethylene films, especially those requiring thicker film materials. Typically, these machines are employed for bundling plastic bottles, various types of jars, and cans. However, their flexibility extends to packing a diverse range of products, both single items and multiples. Similarly, wrapping machines are a category of packaging machinery utilized to encase articles with flexible materials such as plastic sheets, films, foil, paper, or other substances.

There are four primary types of wrapping machines:

Flow Wrapper: These are one of the widely utilized variant of wrapping machines. It works by wrapping individual items by creating a continuous tube of material around the product, subsequently sealing, and cutting it. Flow-wrapped products, like individually wrapped candy bars and granola bars, are commonplace in grocery stores. This technology finds application in various sectors, including medical devices and non-food items.

Shrink Wrappers: Shrink wrappers represent another category of wrapping machine which utilises heat-shrinkable film. These are suitable for various product sizes, including those with irregular shapes or sharp edges. These machines are available in a diverse range of formats, spanning from manual to automatic models.

Over Wrappers: Over wrappers are specifically designed for packaging flat, straight-edged items like cartons or flat boxes. This equipment is often employed to add an extra layer of protection to primary packages, such as wrapping clear plastic film around a small carton containing a perfume bottle or personal care item. The process involves pushing the product through heat-sealable film cut from a larger roll, followed by tucking and folding the film around the product. Heated plates then seal the film with a tight crease, imparting a gift-wrapped appearance to the package.

Twist Wrapper: Twist Wrapper, also known as bunch wrapper, is a specialized type of wrapping machine. Widely used in the confectionery industry, these machines package small, individual units like hard candies, bonbons, or caramel rolls. In a typical twist wrapping application, the product is aligned for wrapping while the machine unwinds the film rollstock to precisely measure the required amount of film. The film is cut to size, and rotary grippers swiftly fold and twist the film around the product, creating a double twist wrap.

Market Segmentation by End User Industry

On the basis of end-user industry, packaging machinery is majorly divided into six major categories: Food & Beverage, Pharmaceutical & Healthcare, Personal Care & Cosmetics Industry, Household & Cleaning Products Industry, Industrial & Chemical Industry, and E-commerce & Retail Industry.

Food and Beverage Industry

Flexible packaging machinery plays a crucial role in the food and beverage industry, where it is used to package a wide range of products. For instance, in the food sector, flexible packaging machinery is employed to package snacks, dairy products, frozen foods, baked goods, confectionery, and more. These machines offer versatility in packaging formats such as pouches, bags, wraps, and trays, allowing manufacturers to cater to various product types and sizes. In the beverage sector, flexible packaging machinery is utilized for packaging juices, sauces, liquid products, and more, offering options like stand-up pouches, spouted pouches, and flexible bottles. These machines provide efficiency in production, ensuring high-speed packaging with minimal wastage, while also offering customization options for branding and product differentiation.

Pharmaceutical and Healthcare Industry

In the pharmaceutical and healthcare industry, flexible packaging machinery is essential for packaging pharmaceutical products, medical devices, vitamins, supplements, and other healthcare items. These machines are designed to meet the stringent regulatory requirements of the industry, ensuring product safety, integrity, and compliance with standards such as Good Manufacturing Practices (GMP). Flexible packaging machinery in this sector offers features like sterile packaging, tamper-evident seals, precise dosing capabilities, and barrier properties to protect sensitive products from moisture, light, and contamination. Additionally, these machines provide options for packaging formats such as blister packs, sachets, pouches, and stick packs, catering to different dosage forms and patient preferences.

Personal Care and Cosmetics Industry

Flexible packaging machinery plays a vital role in the personal care and cosmetics industry, where it is used to package a wide range of products such as cosmetics, skincare products, hair care products, toiletries, and perfumes. These machines offer flexibility in packaging design, allowing manufacturers to create attractive and durable packaging solutions that enhance brand visibility and consumer appeal. Flexible packaging machinery in this sector provides options for packaging formats such as tubes, bottles, jars, sachets, and pouches, with features like easy-open seals, tamper-proof closures, and aesthetic enhancements. Additionally, these machines enable efficient production processes, ensuring high-speed packaging with precision and consistency.

Household and Cleaning Products Industry

In the household and cleaning products industry, flexible packaging machinery is utilized to package products such as household cleaning products, detergents, soaps, air fresheners, and other household items. These machines offer versatility in packaging formats, allowing manufacturers to package products in pouches, bags, bottles, and multipacks. Flexible packaging machinery in this sector provides options for features such as resealable closures, tear-resistant materials, and barrier properties to protect products from moisture, spills, and contamination. Additionally, these machines enable efficient production processes, ensuring high-speed packaging with minimal downtime and waste.

Industrial and Chemical Industry

Flexible packaging machinery is also utilized in the industrial and chemical industry for packaging products such as industrial chemicals, lubricants, paints, adhesives, and other chemical products. These machines are designed to handle a wide range of materials and provide options for packaging formats such as drums, bags, pouches, and containers. Flexible packaging machinery in this sector offers features such as chemical-resistant materials, barrier properties, and specialized sealing techniques to ensure product safety and integrity. Additionally, these machines enable efficient production processes, allowing manufacturers to meet the demands of a dynamic and competitive market.

E-commerce and Retail Industry

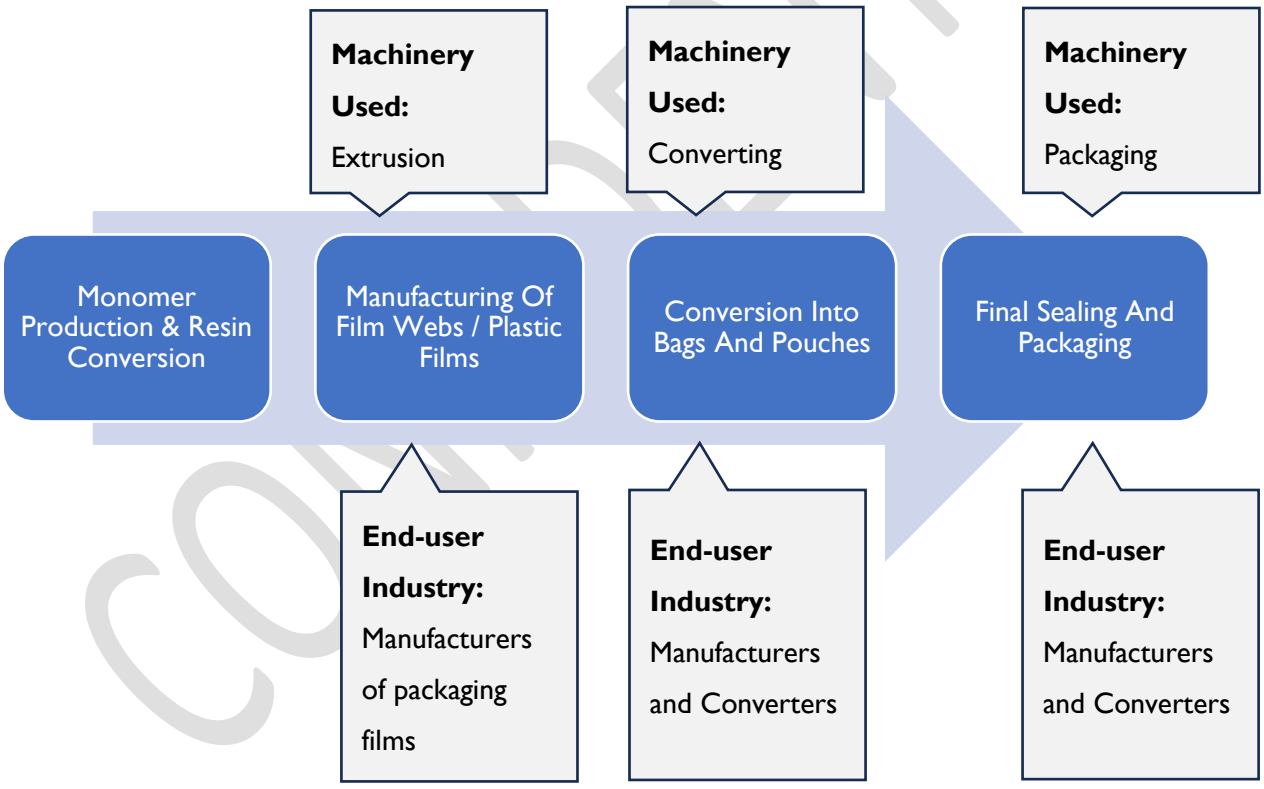
In the e-commerce and retail industry, flexible packaging machinery plays a crucial role in packaging products sold through online platforms or retail outlets. These machines offer versatility in packaging formats, allowing manufacturers to package products in pouches, bags, boxes, and cartons suitable for shipping, storage, and display. Flexible packaging machinery in this sector provides options for features such as tamper-evident seals, easy-open closures, and branding enhancements to create a memorable unboxing experience for consumers. Additionally, these machines enable efficient production processes, ensuring high-speed packaging with customization options to meet the unique requirements of e-commerce and retail channels.

Key Stakeholders in Packaging Value Chain

Flexible packaging has rapidly become a staple in almost every modern market and sector, gradually gaining popularity as an increasing number of brands and consumers appreciate its cost-effectiveness, adaptability, and ease of transport.

The production of flexible packaging is an intricate procedure involving meticulous planning and execution. It commences with the acquisition and refinement of materials such as crude oil and natural gas, ultimately transforming them into bags and sachets through a detailed process.

A typical flexible package comprises numerous distinct, exceptionally thin layers, each crafted from a different material carefully chosen to enhance the overall structure of the package. Many of these materials find applications in various packaging forms, but in the case of flexible packaging, they must be shaped into a thin web to seamlessly layer them together.



Monomer Production & Resin Conversion

This is the most basic level at which the process for creation of flexible packaging starts. The production of the final package incorporates several steps before the sealing and packing of the product. Each step caters to a different segment, with different companies acting as providers for the subsequential steps.

For creation of the raw component for making of films, the process of making flexible packaging begins with the production of monomers to create polymers. This starts with refining of crude oil and natural gas into petroleum. Then petroleum, consisting of hydrocarbons, is further worked upon to obtain *monomers*. Thus, hydrocarbons, sourced from crude oil or natural gas, undergo chemical transformations to yield specific monomers.

Common instances include ethylene, primarily sourced from ethane, and propylene, derived from propane. Each of the above-mentioned *monomers* acts as a foundational component for different kinds of plastics. For instance, Polyester (PET) and nylon are commonly employed to enhance a package's resistance against punctures or tears, while polypropylene (PP) is frequently utilized as a heat-sealable layer. Ethylene vinyl acetate (EVA) is a plastic type often used as an adhesive.

The subsequent phase in the process is *polymerization*, where monomers undergo chemical reactions to create extensive chains or macromolecules. These polymers function as fundamental units that can be shaped into a variety of forms.

The acquired polymers undergo additional processing to produce *resin pellets*. These pellets play a vital role as essential raw materials in the production of *films and sheets*, from which the packaging is derived. Serving as a uniform raw material with consistent properties, these pellets enable precise control over the composition and attributes of the material. Resin pellets find application in diverse manufacturing processes, including extrusion, injection moulding, and blow moulding, all of which are employed in the production of films and sheets.

Manufacturing of Films Webs

This is where the real production of flexible packaging starts from and is the starting point where the layers of packaging are created.

Once the resins take form, they undergo a transformation from a solid to a liquid or molten state through a process known as *extrusion*. In this process, *resin pellets are melted and shaped into a continuous film or sheet, referred to as a web*. An extrusion machine is employed for this stage, involving the forcing of molten polymer through a die to generate *a film or sheet*. The use *of extrusion systems* becomes crucial as they contribute to enhancing the thickness of packaging without increasing the thickness of the film layers themselves.

In the manufacturing of films and sheets, there are many distinct methods are employed to process the molten plastic extruded from the extruder die. Few of the prominent ones are:

- The **first method**, known as the *cast film process*, involves extruding molten plastic through a straight slot die onto a cooled cylinder, termed the *chill roll.* In this, a cast film extrusion line is used to obtain the end result. There are various types of cast film extrusion lines that cater to different manufacturing needs. The most common ones are *Mono-layer Cast Film Lines, Multi-layer Cast Film Line, High-Speed Cast Film Line* etc.

- The **second method,** the blown or tubular film process, continuously extrudes molten plastic through a die in the form of a circular annulus, resulting in its emergence as a tube. To prevent the tube from collapsing, air pressure is maintained inside the tube or bubble. Mainly two types of machines are used in the blown film extrusion process, namely *Mono-layer Blown Film Line*, and *Coextrusion Blown Film Line.*
- Another approach is **sheet/film extrusion**, which bears some resemblance to the blown film method. However, due to the need for thicker end products compared to those produced by blown film extrusion, the material undergoes *a pulling and rolling process instead of being blown.* Most popular types of machines used in sheet extrusion are *Mono-layer Sheet Extrusion Lines,* and *Coextrusion Sheet Extrusion Lines.*
- In the case of Coextrusion, it involves employing two extruders to simultaneously extrude multiple layers of material. Here, two extruders melt and deliver plastic into a single extrusion head (die), which then shapes the materials as desired. The thickness of each layer is regulated by the relative speeds and sizes of the individual extruders delivering the materials. This process can be applied to all the methods mentioned earlier, including *blown film, tubing, and sheet extrusion*.

In all these processes, the molten polymer is processed to yield a film that is then wound onto reels and cut to the desired size. To enhance strength and optimize barrier characteristics, the film can be stretched to realign or orient the molecules both in the machine direction (MD) and across the web in the transverse (TD) or cross direction.

A film stretched in only one direction is termed as mono-oriented, while a film stretched in both directions is referred to as biaxially orientated. Bringing the molecules closer together during stretching improves gas and water vapor barrier properties. The orientation of molecules also contributes to increased mechanical strength of the film.

Extrusion machines find widespread application across diverse industries besides packaging. In packaging sector, the manufactures of packaging films use extrusion machinery to obtain film webs to create plastic films.

Conversion Into Bags and Pouches

Once the web is formed after adding final orientation preference, the next step is to convert it into the final product. In this case, converting machines are used to take continuous rolls of thin, flat materials and convert them into a final product.

Converting machinery for flexible packaging typically comprises various equipment, including *printing presses, laminators, slitters, pouch making machines, bag making machines, and wicketers.*

Bag making machines specialize in crafting different types of bags, including shopping bags and garbage bags, while pouch making machines focus on the production of various pouch styles and sizes suitable for packaging

food, liquids, and other products. **Form-Fill-Seal (FFS) machines** streamline the entire process, seamlessly *forming, filling, and sealing bags* or *pouches in a continuous operation.*

During the slitting phase, these machines trim wide films or sheets into narrower rolls, enabling the customization of packaging material width. Lamination, another vital function, involves merging multiple material layers to enhance properties such as strength and barrier capabilities in flexible packaging.

Coating machines add additional layers to the film, providing functionalities like protection or printability. Lastly, printing presses within converting machines enhance the visual appeal and identification of flexible packaging by incorporating graphics, information, or branding onto the material. Collectively, these converting processes play a crucial role in tailoring and enhancing the characteristics of the base film, ensuring it meets specific requirements for diverse applications in flexible packaging.

At this stage of the process, the package typically exists as a flat web consisting of multiple functional layers and a final print layer (pre-made packaging undergoes printing after the web has been formed). In order to make the packaging that will eventually appear on store shelves, the converter must shape the web into a specific form. Consequently, these machines go a step further to transform the films into pouches, sachets, envelopes, and other desired types.

Converters may undertake only a few steps in the manufacturing process, or they might handle each stage internally from sourcing to completion. Those with limited equipment capabilities might procure pre-laminated web from other converters, while others may opt to purchase pre-made packaging that is already laminated and shaped, allowing them to concentrate on the graphic printing aspect of the package.

Companies involved in flexible packaging, such as those in the food and beverage industry, pharmaceuticals, personal care products, and various consumer goods sectors, are likely to utilize this machinery. Additionally, manufacturers specializing in flexible packaging solutions, packaging converters, and printing companies focused on packaging materials could also be among the entities employing this machinery to produce a diverse range of packaging formats like pouches, sachets, and envelopes.

Final Sealing and Packaging

Once the webs are converted into films with desired qualities, and films into desirable type of flexible packaging on basis of the requirement, the end stages of packaging begins. This stage incorporates the usage of sealing and packaging machines.

In this stage, the package has a shape. The machines are used to package products or components. This product area includes equipment that forms, fills, seals, wraps, cleans, and packages at different levels of automation.

Involved in the creation and filling process, these machines shape materials for flexible packaging, such as bags or pouches, efficiently filling them with the designated product. The sealing function plays a vital role in ensuring the integrity and freshness of the filled packages. Moreover, these machines often include cutting

mechanisms that separate individual packages from a continuous roll or sheet, guaranteeing distinct and ready-to-distribute products. Additionally, packaging machines may integrate advanced labelling and coding systems, offering essential identification and traceability for the packaged products. In essence, these machines play a pivotal role in the concluding phases of the flexible packaging process, primarily focusing on shaping, filling, and sealing to present a finalized and identifiable product to the market.

Different types of sealing and packaging machines include:

- **Heat Sealers:** Utilize heat to melt a plastic or composite material to form a seal. Commonly used for sealing bags, pouches, and various packaging materials.
- **Vacuum Sealers:** Remove air from the packaging before sealing, creating a vacuum. Ideal for extending the shelf life of food products and preventing spoilage.
- **Continuous Band Sealers:** Suitable for sealing large quantities of bags in a continuous process. Ideal for high-volume packaging production.
- **Automatic Form-Fill-Seal (FFS) Machines:** Integrate the process of forming a package, filling it with the product, and sealing it automatically. Efficient for streamlined packaging operations.
- **Shrink Wrap Machines:** Use heat to shrink a plastic film tightly around a product, providing both sealing and packaging in one operation. Commonly used for bundling and securing products.

Companies across various industries utilize these machines, particularly those involved in packaging and manufacturing. This includes businesses in the food and beverage sector, pharmaceutical companies, personal care product manufacturers, and consumer goods producers. Packaging converters, printing companies specializing in packaging materials, and manufacturers focused on flexible packaging solutions are also common users of this machinery. Essentially, any industry requiring the efficient formation, filling, sealing, and labelling of flexible packaging materials for their products may employ this machinery in their production processes.

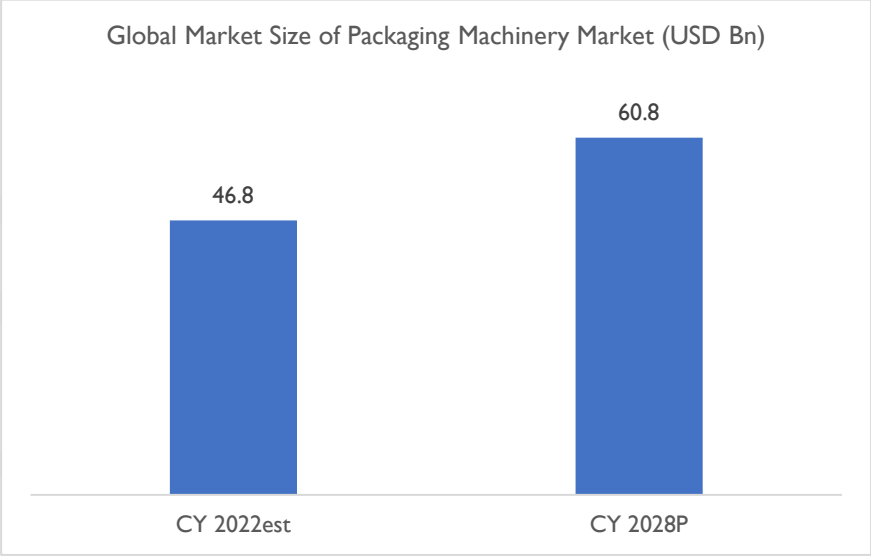
Market Size Growth of Packaging Machinery Industry

Global Scenario

Packaging machinery market play a crucial role in ensuring product safety throughout the supply chain. It performs range of functions that include filling, and forming; bagging, packing, unpacking, bottling, sealing, and lidding; wrapping, shrink film, and heat sealing; inspection and check weighing; and labeling and encoding, amongst several others.

The packaging industry has been witnessing increasing adoption globally in line with broader economic growth. The consumption of packaging machineries has observed growing application in a wide range of industries that include food & beverages, pharmaceutical, personal care product, and other consumer goods as well as wide range of industrial sectors. Rapid surge in the e-commerce sector too is fueling the demand for various packaging machinery. Consistent consumption demand growth is driving the manufacturing activity in the above end user industries translating in deeper penetration of packaging machinery. Increase in consumer goods demand supported by income growth and rising spending on packaged foods & beverages, personal care products, pharmaceutical and other industrial sector are the key factors driving the packaging machinery demand globally.

As per industry sources, the market size of global packaging machinery market was estimated to value at USD 46.8 Bn in 2022 which is slated to grow to USD 60.8 Bn by 2028, witnessing 4.5% CAGR increase between 2022-28[3].



Industry Sources, D&B Estimates

[3] The global market data (estimated market size & growth forecast) on packaging machinery industry is estimated based on market size information provided by various third-party research agencies. D&B has not independently verified the sources or methodologies used by these third-party agencies in compiling the market size.

Industry sources also reveal, the food and beverage industry has emerged as the largest end user of packaging machinery globally. Since, the packaged food segment offers greater convenience, ease, and time efficiency its demand is witnessing a healthy growth amongst millennials and Gen-Z consumer segment. Moreover, after pandemic the preference for packaged food product is witnessing an even higher demand as it ensures minimum human intervention and is considered hygienic. Going forward, these attributes are expected to propel the deeper penetration of packaging machinery in the food and beverages sector.

Furthermore, the rapid innovation and advancements such as automation, robots, and other technologies that is happening in the manufacturing space to scale up efficiency and achieve cost control are creating potential opportunity for modern automated packaging machines.

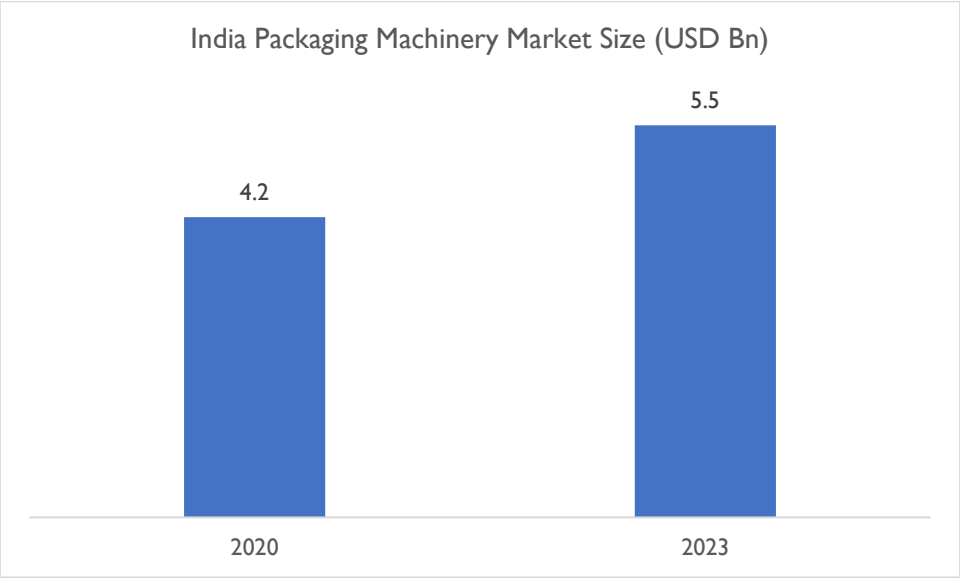
India Market Scenario

The Indian market for Packaging Machinery is intricately linked with the surging demand for packaging across diverse end-use applications, propelled by an upward trajectory in disposable income. The rapid expansion of the end-user market further amplifies the call for Packaging Machinery, witnessing significant growth in the country. Key drivers include the flourishing food and beverage sector, the pharmaceutical industry, and the burgeoning e-commerce segment, collectively steering the demand for the Packaging Machinery Market in India.

The Food and Beverage (F&B) sector stands as a primary consumer of packaging machinery, contributing significantly to India's dynamic market. The F&B industry, marked by numerous segments and sub-segments, is recognized as one of India's largest and fastest-growing sectors. Constituting 3 percent of the GDP, the F&B industry commands a substantial share, encompassing around two-thirds of India's overall retail market. Looking ahead, the F&B market is poised to achieve nearly USD 505 billion by 2027.

Another pivotal consumer of packaging machinery is the pharmaceutical industry, currently estimated at USD 49.78 billion as of FY 2023, is anticipated to reach to USD 130 billion by 2030, according to the National Investment Promotion and Facilitation Agency. These robust forecasts underline the escalating demand for packaging in the pharmaceutical sector, consequently propelling the market demand for packaging machinery in the Indian landscape.

Considering these influential factors, the packaging machinery industry has witnessed a CAGR of 9.33%, between 2020 and 2023 reaching an estimated value of USD 5.5 billion, a marked increase from the USD 4.2 billion recorded in 2020.



Source: D&B Research

Domestic Landscape

Demand Drivers

Demand for packaging machines is directly linked to consumer demand pattern as its usage is primarily for packaging consumer products ranging from food products, garments, foot wear, pharmaceuticals, and other consumer durable and non-durable products. Higher sales of consumer products that trigger consumer product packaging translate into demand for packaging machines.

Expanding E-Commerce Market

Organized retail and e-commerce are two of the leading users of flexible packaging products. Both these segments are witnessing strong growth in India, on the back of improved purchasing power and changing consumption habits.

India's e-commerce surge is driven by the escalating number of internet users, widespread smartphone adoption, and an upswing in disposable incomes. This expansive trend encompasses diverse commerce segments, including business-to-business (B2B), direct-to-consumer (D2C), consumer-to-consumer (C2C), and consumer-to-business (C2B). Among these, D2C and B2B have had significant growth in recent years.

As of 2021, India's e-commerce market boasts a formidable Gross Merchandise Value, surpassing USD 55 billion, and projections indicate a remarkable trajectory with an anticipated annual Gross Merchandise Value of USD 350 billion by 2030. These numbers show the industry's dynamic evolution, further emphasized by the participation of over 348 million users in online transactions and nearly 140 million engaging in online shopping.

This growth in e-commerce activities signifies an increased need for efficient and adaptable packaging solutions, hence contributing to an upswing in the demand for flexible packaging films.

Indian Food & Beverage Industry

According to industry reports, the food and beverage sector in India is increasingly growing. Constituting approximately 3% of India's GDP and accounting for nearly two-thirds of the entire retail market in the country, this industry is experiencing significant profitability. The expansion of the food and beverage sector can be attributed to various factors, including the ongoing urbanization, evolving dietary and lifestyle choices among millennials, and a surge in household spending rates.

Moreover, India is considered to be one of the *top 5 packaged food markets* in the world, and the second largest in Asia. According to a study by the Associated Chambers of Commerce and Industry of India (ASSOCHAM), flexible packaging materials accounted for nearly one fourth of the total food packaging industry. This includes food packaging laminates as well as packaging foils. Further, according to All India Food Processors Association, the Indian food and beverage packaging industry that is growing by 14.8 % annually is expected to reach USD 86 billion in 2029.

However, nearly 80% of the current packaged food market is concentrated in the urban areas. Additionally, at 24 kg/ year, the per capita consumption of packaged food in India is also low. Thus, it could be commented that despite the rapid strides the country has made in packaged food & beverage industry, the growth potential is immense. Similarly, with the packaged food industry, the consumption of ready-to-eat, dairy products, canned food, and probiotic foods are witnessing rapid growth. The usage of flexible packaging material is highest among these products.

Rapid growth in demand for packaged food products coupled with increasing shift to flexible packaging from other traditional packaging have helped in increasing the demand for flexible packaging products. Considering the growth potential inherent in Indian packaged food industry, the future demand for flexible packaging products from food & beverage sector looks strong.

Growing FMCG Sector

The FMCG sector in India expanded primarily due to consumer-driven growth and increased product prices, particularly for essential goods. In the April-June 2023 quarter, India's FMCG sector witnessed a notable growth of 7.5% by volumes, marking the highest in the past eight quarters. This growth was propelled by a resurgence in rural India and increased expansion in modern trade. As India's fourth-largest sector, the FMCG industry has sustained a robust growth trajectory over the years, driven by factors such as rising disposable income, a growing youth population, and increased consumer brand awareness.

Accounting for 50% of FMCG sales in India, household and personal care contribute significantly to the country's GDP. As of December 2022, the FMCG market reached USD 56.8 billion, while the Indian food processing market size reached USD 307.2 trillion in 2022, projected to reach USD 547.3 trillion by 2028 with a CAGR of 9.5% during 2023-2028.

The advent of online retail and e-commerce has enabled FMCG businesses to market and sell their products nationwide with minimal investment in marketing activities. This robust growth in the FMCG sector in India is set to generate a heightened demand for flexible packaging.

Pharmaceutical Packaging

Between FY 2015-21, the Indian pharmaceutical industry witnessed a healthy annual revenue turnover growth, registering an 8% CAGR driven by robust domestic and export demands. However, the advent of the Covid-19 pandemic cast a shadow on revenue growth in FY 2022, especially affecting export revenue. Despite the challenges, pharmaceutical exports in FY 2022 remained steady at USD 24.62 billion, aligning closely with the preceding year's figures.

The disruptions in freight movement caused by the pandemic in the first half of FY 2022 severely impacted pharmaceutical exports, with a modest recovery observed in the latter part of the fiscal year, despite a weakened currency. Moving into FY 2023, India saw a noteworthy increase in pharmaceutical exports, reaching nearly USD 25.39 billion. Over the period from FY18 to FY23, the Indian pharmaceutical industry

demonstrated resilience with a CAGR ranging from 6-8%, propelled by an 8% surge in exports and a 6% uptick in the domestic market.

Anticipating this growth momentum and considering expected developments, the pharmaceutical industry's annual revenue turnover is projected to reach USD 130 billion by 2030. This growth in the pharmaceutical industry is driving a substantial demand for flexible packaging. As companies expand, the need for reliable packaging solutions is on the rise. Flexible packaging films, valued for their quality and versatility, are becoming essential for secure and efficient pharmaceutical packaging.

Packaging of Personal Care Products

Introduction of lower volume SKUs, especially in detergents and hair care products have increased the usage of flexible packaging products in the personal care segment. The superior barrier properties that have increased the usage of flexible packaging in food & beverage sector is also a major factor behind its acceptance in personal care product segment.

Personal care segment has witnessed rapid growth, on the back of a combination of changes in lifestyle pattern, and higher disposable income. The sales of body care & hair care products, hygiene products and cosmetics have increased as the disposable income spending among Indian middle class saw a shift.

Globally the growth in the middle-class consumer segment have invariably resulted in higher sales of personal care products. India too is following this trend as the spending power of middle-class increases.

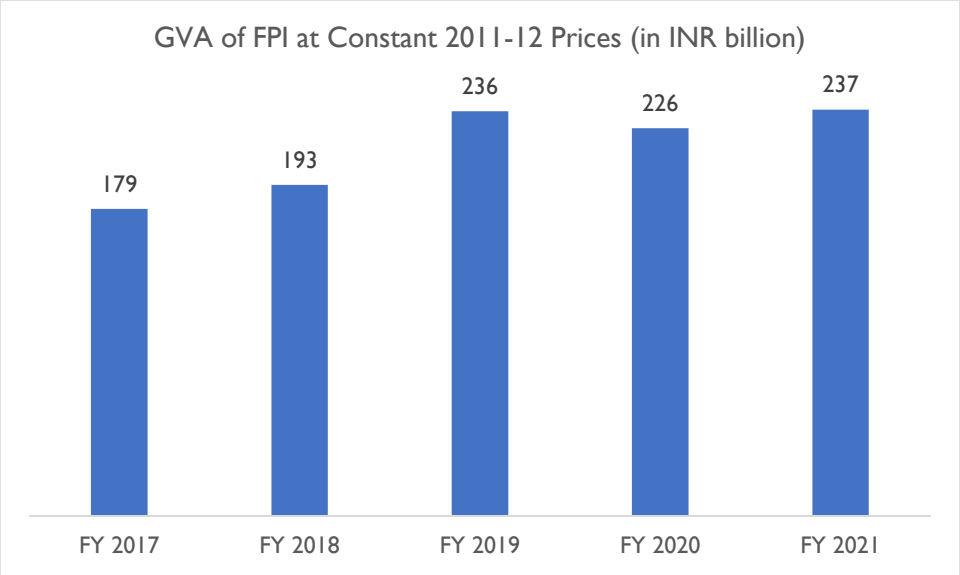
Analysis on Performance Snapshot and capex trend of major end user industry

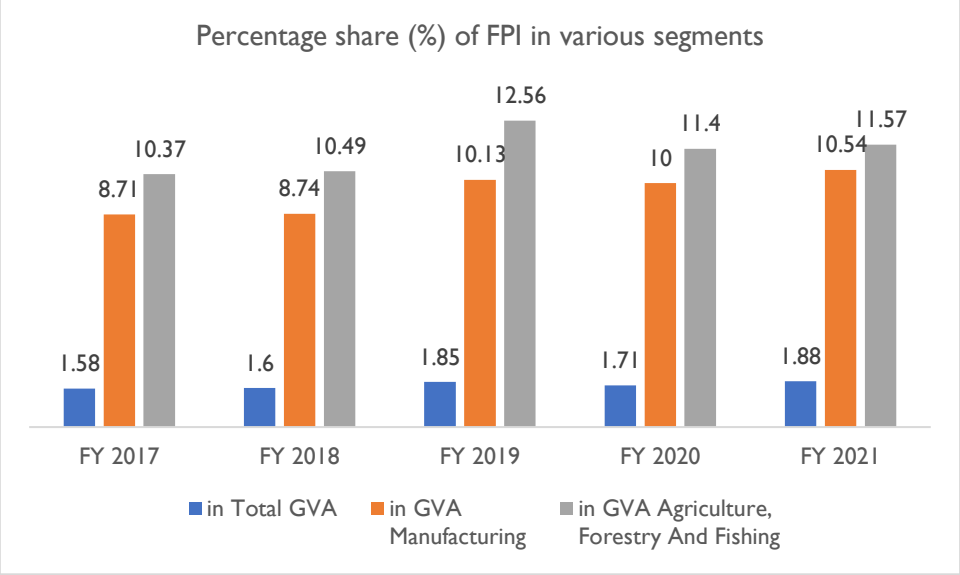
Processed Food

Performance Snapshot

In the last 6-8 years, India's Food Processing sector has become a robust growth engine for the powerful Indian economy, largely due to the forward-looking policy initiatives of the Ministry of Food Processing Industries (MoFPI). The sector's exceptional performance is attributable to these interventions.

India's diverse agro-climatic zones result in the production of a wide array of foods, spanning cereals, pulses, fruits, vegetables, and millets. Agricultural production in the country consistently achieves higher output, with India leading globally in pulses and milk, securing second place in vegetable primary, fruit primary, wheat, and rice, and ranking third in cereals and eggs primary as per the 2019 World Agriculture rankings. The positive impact on the food processing sector is driven by an ample supply of raw materials, increasing demand for food products, and government incentives.





Source: Ministry of Food Processing Industries, Annual Report 2022-2023

As per the recent report from the Ministry of Food Processing Industries, the Food Processing sector has demonstrated an average annual growth rate of approximately 8.38% over the five years leading up to 2020-21. This contrasts with a growth rate of about 4.87% in the Agriculture & allied sector (at 2011-12 prices) during the same period. The Food Processing Sector has gained significance within the Indian economy, contributing substantially to GDP, employment, and investment. In the fiscal year 2020-21 (at 2011-12 prices), the sector accounted for 10.54% and 11.57% of the Gross Value Added (GVA) in the Manufacturing and Agriculture sectors, respectively.

Further, the Indian government states that the food processing industry has emerged as the "sunrise sector" in India and has attracted large FDI investments in the past nine years. Moreover, the government also claims that the processed food segment's contribution to agri exports has grown to 23 per cent from 13 per cent in the past nine years. The exports of food processed have grown by 150 per cent, and today, India exports USD 50,000 million worth of agro-exports and ranks seventh globally.

Year	FDI (in INR Billion)	FDI (in USD Million)
2014-15	31.64	515.86
2015-16	33.12	505.88
2016-17	48.65	727.22
2017-18	58.35	904.90
2018-19	44.30	628.24
2019-20	64.14	904.70
2020-21	16.70	393.41
2021-22	52.90	709.72
2022-23 (Apr-Sept)	33.67	430.69

Source: Ministry of Food Processing Industries, Annual Report 2022-2023

According to recent findings of the WHO (World Health Organization), India has emerged as one of the fastest-growing markets for ultra-processed foods. This sector experienced a notable shift, with a compound annual growth rate of approximately 13.37% in retail sales from 2011 to 2021.

According to industry sources, the Indian snacks market size is estimated to be valued at INR 426.9 billion in 2023 and is expected to reach INR 955.2 billion by 2032, exhibiting a growth rate (CAGR) of 9.08% during the forecast period. The rising popularity of convenient food products, increasing implementation of quality standards by the Food Safety and Standards Authority of India (FSSAI), and increasing number of e-commerce brands and distribution channels represent some of the key factors driving the market.

As per industry sources, PepsiCo, the owner of well-known brands such as Lay's, Cheetos, Doritos, and Kurkure, and Indian companies like Haldiram's, Bikaji, and ITC (with Reliance recently entering the segment), alongside regional players such as Balaji Wafers, Prabhuji, and Prataap Snacks, as well as niche players like BRB, Too Yum, and Farmley, are all contributing to the robust demand and increased sales in the snacking industry. Haldiram's, a traditional sweets and snacks brand, reported a substantial 19% surge in snack sales,

reaching INR 92.15 billion for the fiscal year ending in March 2023. Meanwhile, PepsiCo's snack sales amounted to INR 64.30 billion, and Balaji Wafers achieved sales of INR 52.96 billion.

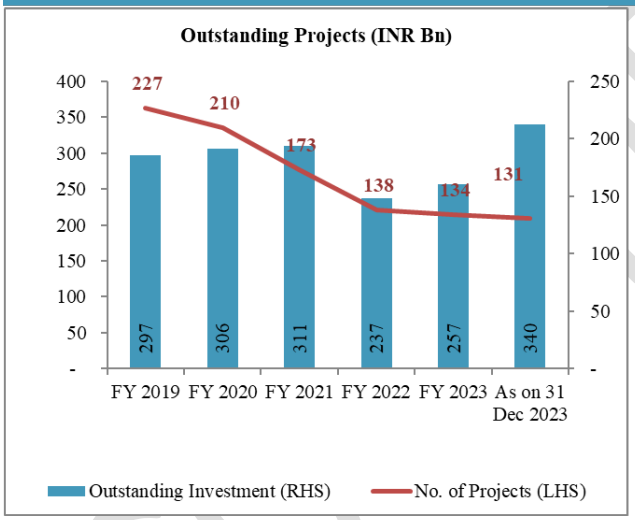
Capex Trend

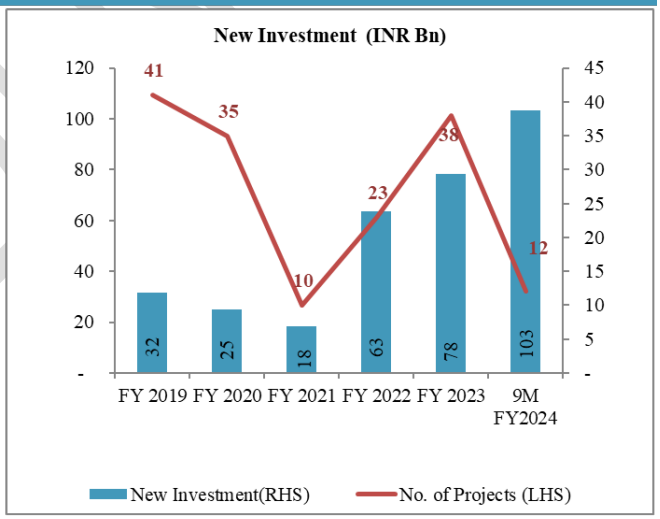
Outstanding Projects

The outstanding investment in the processed foods sector shows the cumulative financial commitment to existing projects in the sector. There is an increase in outstanding investments from FY 2019, INR 297 billion, to FY 2021 with INR 311 billion, showcasing a commitment to sustained growth and development in the sector. Hampered growth due to Covid-19 pandemic led to a decline in investment in subsequent years. However, the period until December 2023 (as a part of FY 2024) experienced significant surge, reaching INR 340 billion on the back of improved growth prospects.

Across the fiscal years, there is a consistent decrease in the number of outstanding projects, dropping from 227 in FY 2019 to 134 in FY 2023. This reduction might be indicative of closure / completion of projects as well as a renewed emphasis on diversification of projects.

Investment Trend in Processed foods





Source: Dun & Bradstreet Research

New investment in Processed Foods industry daw a decline from INR 32 billion in FY 2019 to INR 18 billion in FY 2021. This downfall can be attributed to the impact of covid-19 acorss the world. However, between FY 2021 to FY 2023, the investments in the industry rose sharply, at a CAGR of 106.15%, to reach INR 78 billion in FY 2023. Further, 9M FY2024 shows a substantial spike in new investments, reaching INR 103 billion. This increase comes on the back of increased demand for consumption of processed foods.

Corresponding with the new investment trends, the number of projects saw variations. FY 2019 (41 projects) had a relatively high number, followed by a decrease in FY 2021 (10 projects) due to impact of covid-19. However, the surge in new investments in FY 2022 and FY 2023 aligned with an increase in the number of projects to 38, showcasing a parallel commitment to initiating new ventures.

The substantial surge in new investments in FY 2022 and FY 2023 with continued growth in 9M FY2024 point towards a resilient and expanding sector, poised for further innovation and market leadership.

Personal Care Products

Performace Snapshot *(for beauty & personal care)*

India's beauty and personal care market is on an upward trajectory, poised to reach a staggering USD 30 billion by 2027, constituting 5% of the global market. Fueling this surge is the growing middle-income group, propelling demand for global brands that are eagerly entering the Indian market. Simultaneously, indigenous companies are solidifying their positions with innovative products.

A paradigm shift in consumer values is evident, with sustainable living, ethical consumption, and personalized products gaining prominence in India. The beauty and personal care sector is at the forefront of this transformation, introducing new products, ingredients, and messages. Leveraging technology and the internet, companies are successfully reaching wide audiences, reflecting the industry's adaptability.

The demographic landscape is undergoing a seismic change, with India projected to host 70+ urban centers with populations exceeding a million by 2030. Additionally, boasting the world's largest and youngest workforce, with a median age of 31, India is primed to drive retail demand substantially. Rising affluence, coupled with an anticipated 1.4 times increase in average household income from 2021 to 2031, emerges as a pivotal factor fueling consumption patterns.

By 2031, a significant shift in consumption dynamics is anticipated, transitioning from the bottom of the pyramid to the middle-income segment. This group is poised to represent 80% of households and contribute to 75% of consumer spending. As a result, the beauty market, currently under-penetrated, is expected to witness a surge in per capita spending. Presently standing at USD 14, a stark contrast to USD 313 in the US and USD 38 in China, there exists considerable room for growth.

The Indian beauty, hygiene, and personal care industry, currently valued between USD 15-18 billion, showcases an impressive annual growth rate of 8-9%. The industry's potential is brought on by the confluence of changing consumer preferences, a dynamic demographic landscape, and the increasing convergence of global and local brands. As India positions itself as a key player in the global beauty market, the stage is set for transformative growth and innovation in the years to come.

Capex Trend *(for home & personal care)*

Outstanding Projects

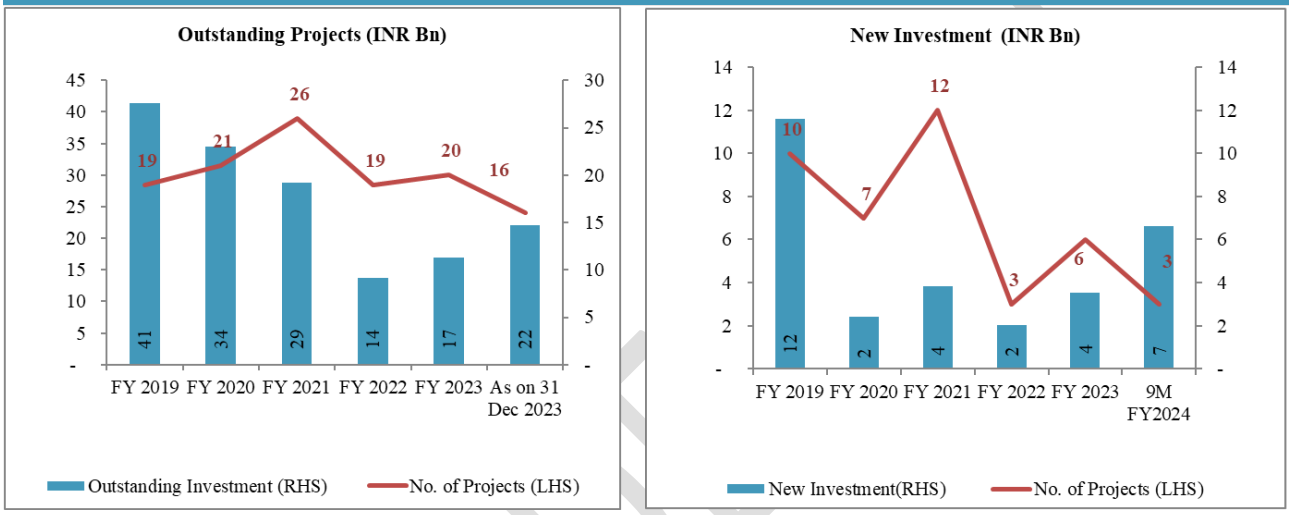
The outstanding investment data provides insights into the cumulative financial commitment to existing projects within the personal and home care segment. The outstanding investment data shows a consistent decline from FY 2019 (INR 41 Bn) to FY 2023 (INR 17 Bn) and as of December 31, 2023 (INR 22 Bn).

The outstanding investment saw a decline between FY 2019 – FY 2022, possibly attributed to the effects of the covid-19 pandemic. However, according to the Consumer Sentiment Index (CSI) by Axis My India for

December 2023, overall household spending has increased for 58% of families, indicating a positive trend in consumption. Spending on essential items, such as personal care and household items, has increased for 49% of families. This reflects a growing emphasis on self-care and maintaining a comfortable living environment and gave rise to an increased investment in the sector between FY 2022 – Dec 31, 2023.

The number of projects remains relatively stable over the fiscal years. FY 2019 starts with 19 projects, increasing to 26 in FY 2021, and then slightly decreasing to 20 in FY 2023. The number further drops to 16 as of December 31, 2023.

Investment Trend in Personal & home care products



Source: Dun & Bradstreet Research

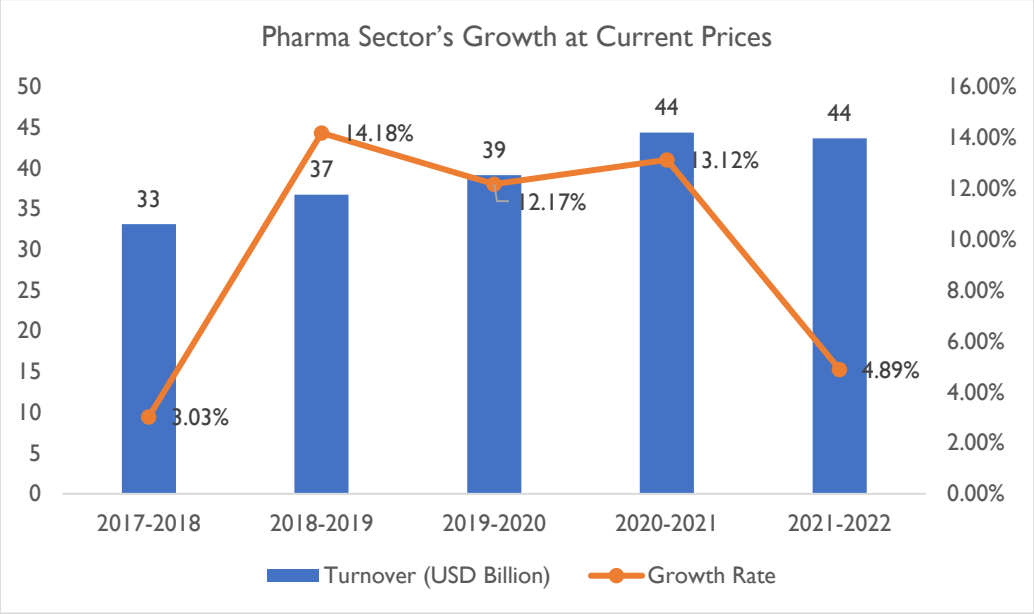
The capex trend in the personal and home care segment displays dynamic fluctuations in new investments and corresponding changes in the number of projects. FY 2019 starts with INR 12 billion, followed by a notable decrease in FY 2020 to INR 2 billion. The period between FY 2022 – Dec 31, 2023 saw a consequetive rise, brought on by the growing emphasis on self-care and maintaining a comfortable living environment.

The number of projects corresponds to the changes in new investments. FY 2019 starts with 10 projects, followed by a decrease to 7 in FY 2020. FY 2021 sees an increase to 12 projects, potentially reflecting a phase of increased activity. FY 2022 and FY 2023 show fluctuations with 3 and 6 projects, respectively. The data for 9M FY2024 indicates 3 projects, suggesting a focused approach to new initiatives.

Pharma

Performace Snapshot

The Economic Survey 2022-23 mentions that India is ranked 3rd worldwide in the production of pharma products by volume and 14th by value. India is the largest provider of generic medicines globally, occupying a 20% share in global supply by volume. Further, the sector contributed to around 1.32% of the Gross Value Added (at 2011-12 constant prices) of the Indian Economy in 2020-21.



Source: Department of Pharmaceutical, Annual Report 2022-2023

From FY 2018 to FY 2022, the Indian pharmaceutical industry logged an average growth rate of 9.48% to USD 44 billion, primarily driven by an increase in exports and a rise in the domestic market. It is expected that the Pharma sector is likely to reach USD 65 Bn industry by 2024 and USD 120 Bn by 2030.

Pharmaceutical sector has emerged as a favourite destination for the foreign investors and is one of the top ten attractive sectors for foreign investment in India. The Government has put in place an investor-friendly Foreign Direct Investment (FDI) policy to promote investment in the Sector. 100% foreign investment is allowed under automatic route in Medical Devices. In pharmaceuticals, up to 100% FDI in greenfield projects and up to 74% FDI in brownfield projectsis allowed under the automatic route. Foreign investment beyond 74% in brownfield projects requires Government approval.

Financial Year	FDI Inflow in Drugs & Pharmaceutical (INR billion)
2018-19	18.42
2019-20	36.50
2020-21	110.15
2021-22	105.52
2022-23	166.54
2023-24 (Apr – Sept)	9.64

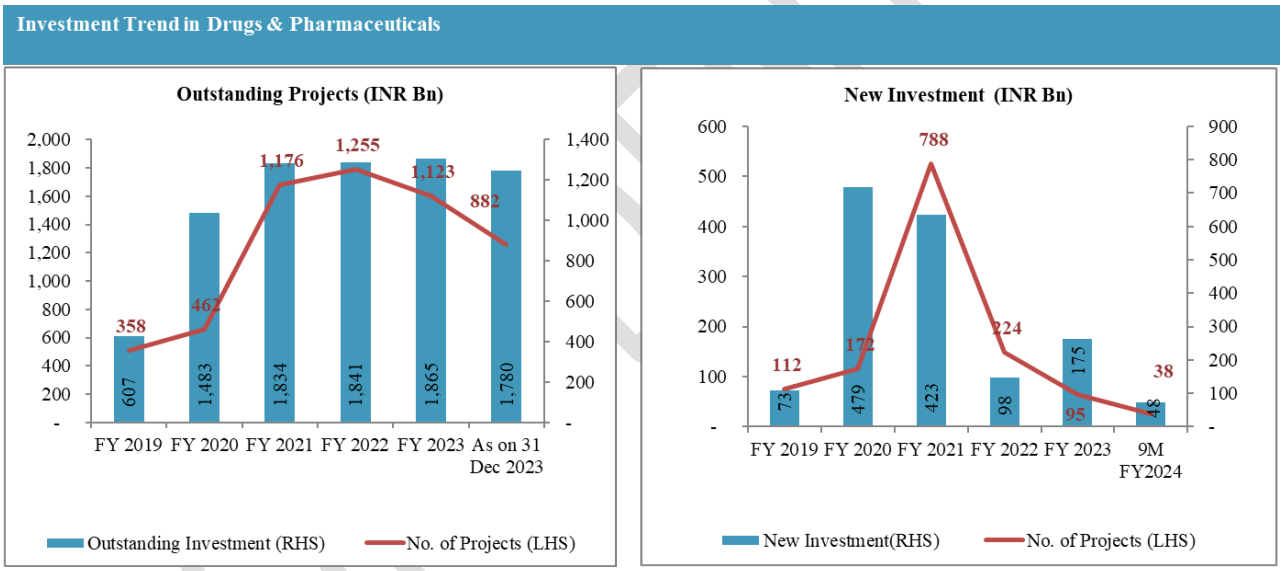
The sector contributes about 3.71% of total FDI inflows in the country across various sectors. Total FDI inflows in Pharma and Medtech Sectors have been INR 1,325.68 billion from April 2000 to September 2022. During the financial year 2023-24 Further, the Department of Pharmaceuticals has approved 6 FDI proposals worth Rs.9,848 crore for brownfield projects during 1st April, 2023 to 30th November 2023.

Capex Trend

Outstanding Projects

The outstanding investment in the pharmaceutical industry shows the cumulative financial commitment to existing projects in the sector. There is a consistent increase in outstanding investments from FY 2019, INR 607 billion, to FY 2023 with INR 1,865 billion in existing projects, showcasing a commitment to sustained growth and development in the sector. This period coincides with the global COVID-19 pandemic, during which the pharmaceutical industry played a critical role in developing vaccines and treatments. The increased investment can be attributed to heightened activity and demand during the pandemic. Further, the period until December 2023 also had considerable investments, reaching INR 1,780 billion.

The number of projects shows significant growth from FY 2019 (358) to FY 2023 (1,123), aligning with the pandemic period. The pharmaceutical industry experienced a surge in research, development, and production of drugs and vaccines, contributing to the dynamic increase in the number of projects. The pandemic likely acted as a catalyst for innovation and expansion within the sector.



Source: D&B Research

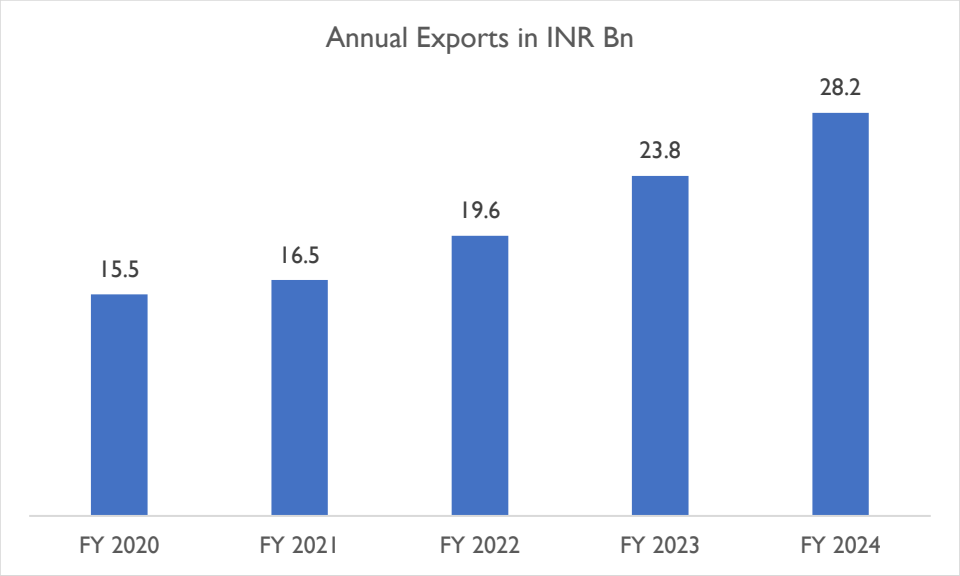
The new investment data in the pharmaceutical industry shows the financial infusion into new projects within the pharmaceutical sector. In FY 2020, investments peaked, experiencing a year-on-year growth of approximately 560% over FY 2019, heightened possibly due to the investment opportunities opened up by the covid-19 pandemic. This was followed by a trend of decline, with investments reaching INR 98 billion in FY 2022.

The number of projects demonstrates variations corresponding to the changes in new investments. FY 2019 starts with 112 projects, leading to FY 2023 with 95 projects. As of 9M FY2024, a new investment of INR 48 billion and 38 projects were observed. This suggests a more focused approach, possibly emphasizing the quality and impact of new initiatives over quantity.

Foreign Trade

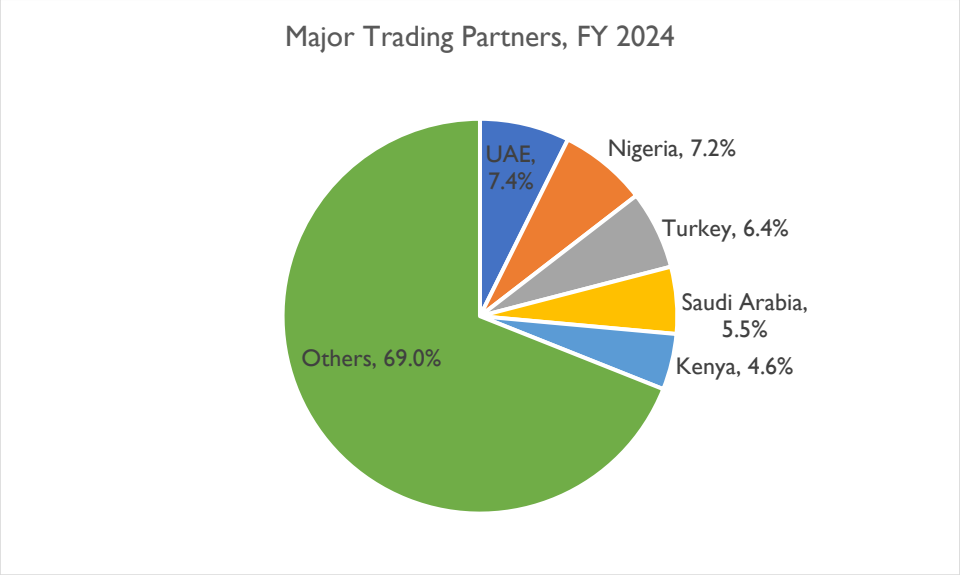
Export Demand[4]

The export of packaging machinery has displayed a remarkable trajectory over the given years. In FY 2020, the export value stood at INR 15.5 billion, and by FY 2024, it reached an impressive INR 28.2 billion. The CAGR over this period stands at a remarkable 16.1%, indicative of sustained and substantial growth.



Source: The Trade Vision

Notably, the most notable growth occurred in FY 2022 and FY 2023, with a staggering YoY increase of 19%, followed by 21%, respectively. This growth can be attributed to the global surge in e-commerce, driving increased demand for packaging solutions. The overall growing exports showcases the resilience and adaptability of the packaging machinery industry on back of global packaging needs.



Source: The Trade Vision

[4] HS Codes 84778090, 84223000, 84772000 have been taken into consideration.

UAE holds the largest share, accounting for 7.4% of the total exports of packaging machinery. This is followed by Nigeria, with 7.2% of the share. Following closely behind are Turkey, Saudia Arbia, and Kenya with 6.4%, 5.5% and 4.6% of the export share, respectively. Rest of the world accounted for 69% of the export market.

Major Exporter of Packaging Machinery

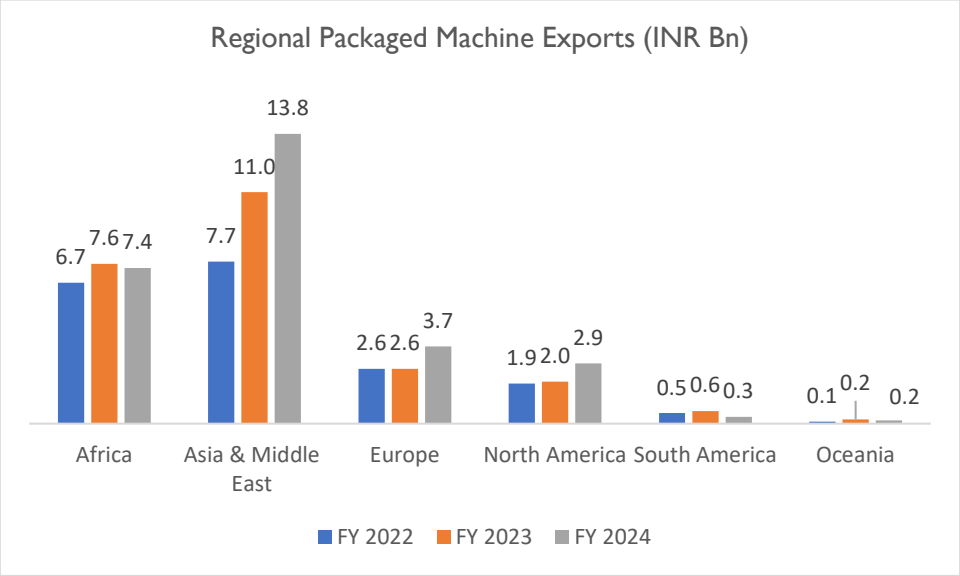
In FY 2024, below companies emerged as a top 10 leading exporter of Packaging Machineries from India:

Top 10 Exporter of Packaging Machineries from India in FY 2024		
Company Name	Export Value in INR Mn	% Share
Lohia Corp Pvt Ltd	2,278	8%
Rajoo Engineers Ltd	2,029	7%
R R Plast Extrusions Pvt Ltd	1,373	5%
Steer Engineering Pvt Ltd	989	4%
Pakona Engineers India Pvt Ltd	981	3%
Acg Pam Pharma Technologies Pvt Ltd	968	3%
Mamata Machinery Pvt Ltd	917	3%
Kostwein India Company Pvt Ltd	877	3%
Shubham Flexible Packaging Machines (P) Ltd	804	3%
Pharma Access Pvt Ltd	770	3%
Total of the Above	**12,540**	**45%**

Sources: The Trade Vision

Regional Export Analysis

Regionally, Asia & Middle East accounted for the highest share in exports of Packaging Machinery from India. This region emerged as the standout performer, experiencing increasing value from INR 7.7 bn in FY 2022 to INR 13.8 billion in FY 2024. This region showcased sharp surge in FY 2024 in comparison to other regions.



Source: The Trade Vision

Africa demonstrated a solid performance, with steady growth over the three fiscal years, increasing from INR 6.7 billion in FY 2022 to INR 7.4 billion in FY 2024. With a CAGR of ~5.1% between FY 2022 – FY 2024.

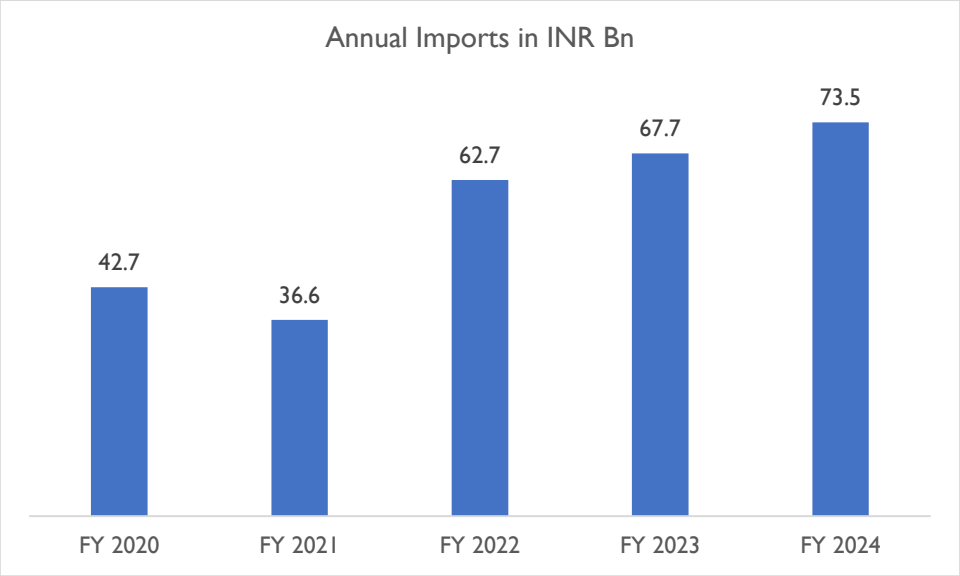
While Europe witnessed a comparatively modest increase in exports from INR 2.6 billion in FY 2022 to INR 3.7 billion in FY 2024, it signifies a consistent upward trajectory. With a CAGR of ~18% between FY 2022 – FY 2024.

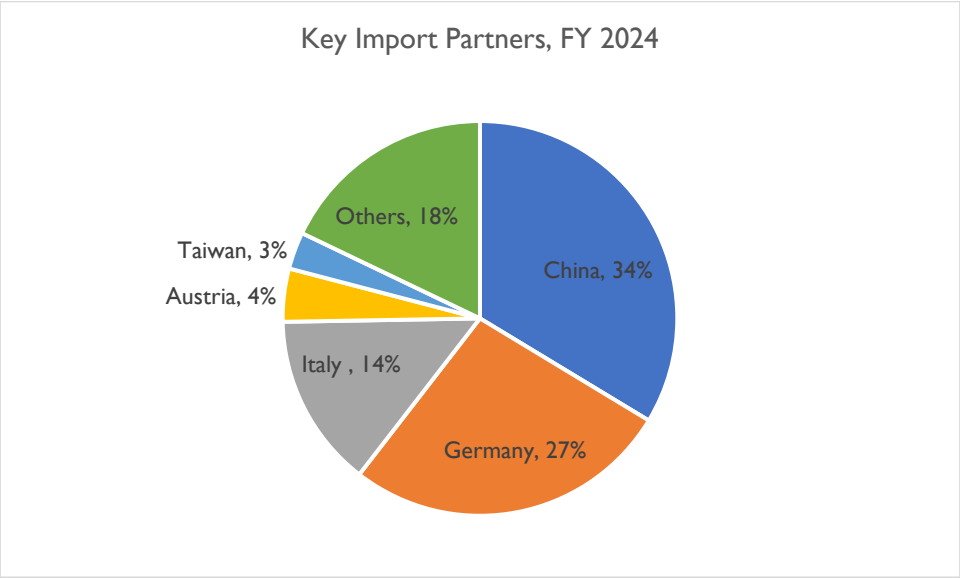
While North America's growth stood at a CAGR of 22.9%, third highest amongst all the regions, South America topped it, with a CAGR of -20% between FY 2022 – FY 2024.

Lastly, Oceania also demonstrated growth, with exports escalating from INR 0.1 billion in FY 2022 to INR 0.2 billion in FY 2024. In terms of compounded growth rate, the region recoded an increase of 26.5% between FY 2022 – FY 2024.

Import Scenario

India is a net importer of packaging machinery. Annual imports reached INR 73.5 Bn in FY 2024, up by 9%, from INR 67.7 billion in FY 2023. This was driven by a need for higher packaging, brought on by the swift embrace of online shopping by consumers and a renewed focus from prominent consumer goods and retail entities in the nation. Indian e-commerce is projected to reach US$ 12 billion in gross merchandise value (GMV) during the festival season from October to December 2024, reflecting a 23% increase from the previous year. This caused the steady demand push for packaging materials, and thereby packaging machinery, in the Indian market.





Source: The Trade Vision

The majority of these imports were from China, accounting for 34% of the total imports for packaging machinery. This was followed by Germany with 27% of the share. Italy, Austria, and Taiwan accounted for 14%, 4% and 3% respectively. Rest of the world accounted for a total of 18% of the total imports.

Government Regulations

The packaging sector has a much wider exposure to other sectors of our economy. The growth of these sectors in the coming decade will have a combined effect to take this sector to new heights. Government of India recognised the potential of this sector and released a slew of policies to further incentivize innovation in this sector.

This sector is primarily overseen by the IIP, a distinguished institution with extensive international affiliations, influential memberships, and key initiatives that collectively establish it as a central authority in shaping the standards and advancements of the packaging industry.

Indian Institute of Packaging (IIP)

The Indian Institute of Packaging (IIP) stands as the national apex body established in 1966, a collaborative effort between the packaging and allied industries and the Ministry of Commerce, Government of India. Functioning as an autonomous body under the Ministry of Commerce, its primary objective is to elevate packaging standards within the country. By focusing on multifarious activities aligned with global premier packaging institutes, the IIP aims to enhance packaging quality for export promotion and overall packaging improvement in India. The Institute's major activities encompass training and education, testing and certification, research and development, as well as consultancy and projects.

The Institute maintains a strong relationship with global entities such as the World Packaging Organization (WPO) and the Asian Packaging Federation (APF). It holds affiliations with international organizations and serves as a founding member of the Asian Packaging Federation (APF), a member of the Institute of Packaging

Professionals (IOPP) in the USA, the Institute Packaging (IOP) in the UK, and the Technical Association of Pulp and Paper Industry (TAPPI) in the USA.

Furthermore, the Institute hosts a bi-annual event, the International Packaging Exhibition, known as INDIAPACK, and a national competition recognizing excellence in packaging, named INDIASTARA. Notably, there is a dedicated effort to conduct Residential Training Programs for African citizens, a special initiative undertaken in collaboration with the Indo-Africa Forum Summit and supported financially by the Ministry of External Affairs and the Ministry of Food Processing Industry, Government of India.

Notably, IIP's laboratories, situated in Mumbai (Headquarters) and regional centers in Delhi, Kolkata, Hyderabad, and Chennai, play a pivotal role in testing various packaging materials. With accreditation from NABL, these laboratories offer a comprehensive range of testing services covering mechanical, chemical, and physico-chemical properties. The IIP extends its reach to both domestic and international standards, including BIS, ISO, BS, ASTM, and more. It issues UN Certification for export packages of hazardous goods and provides equipment calibration standardization certificates.

In addition to its testing prowess, IIP offers industry consulting services, undertaking projects related to standards, substitutions of packaging materials, and package design improvements across diverse sectors. The Institute collaborates with international organizations, such as the Asian Packaging Federation (APF) and the World Packaging Organization (WPO). Moreover, it has contributed significantly to packaging promotion in developing countries through projects with UNIDO, ITC, CFTC, and the EU.

With a diverse membership base, including Patron Members, Overseas Members, Life Members, and Ordinary Members, the IIP continues to serve as a key player in fostering advancements in the art, science, technology, and engineering of packaging in India.

Government Regulations regarding recyclable packaging material & its impact on flexible packaging industry

Plastic Waste Management Rules (2nd Amendment), 2022

Since the last decade, the Indian Government has become proactive in tackling the plastic waste problem. The poor record in plastic recycling together with increasing usage of plastic products would magnify the plastic wastage issue in the coming years, and the proactive stance can be traced to this concern.

The Plastic Waste Management Rules, 2016, introduced by the Ministry of Environment, Forest and Climate Change (MoEFCC) on March 18, 2016, stipulate that generators of plastic waste must undertake measures to minimize its generation, prevent littering, ensure segregated storage at the source, and deliver segregated waste in accordance with the rules. These regulations also outline the obligations of various entities, including local bodies, gram panchayats, waste generators, retailers, and street vendors, for the effective management of plastic waste.

Furthermore, the Plastic Waste Management Rules, 2016, impose Extended Producer Responsibility on Producers, Importers, and Brand Owners, covering both pre-consumer and post-consumer plastic packaging

waste. The guidelines provide a structured framework for the implementation of Extended Producer Responsibility, specifying the roles and responsibilities of Producers, Importers, Brand Owners, as well as regulatory bodies such as the Central Pollution Control Board, State Pollution Control Board or Pollution Control Committees, recyclers, and waste processors, aiming for the efficient execution of Extended Producer Responsibility.

Salient features

- Carry bag made of virgin or recycled plastic, shall not be less than 75 microns in thickness till 31st December 2022 and after that 120 micron
- Carry bags or plastic packaging made of recycled plastics may be used for Packaging food stuff as per the FSSAI Standard and Guideline
- Sachets using plastic material shall not be used for storing, packing or selling guthka, tobacco, pan masala.
- Plastic sheet or like, which is not an integral part of multilayered packaging and cover made of plastic sheet used for packaging, wrapping the commodity shall not be less than fifty microns in thickness except where the thickness of such plastic sheets impair the functionality of the product.
- Producer, Brand Owner and Importers need to work out collection back mechanism for the equivalent quantity of plastic waste introduced by them in Indian market to meet their EPR obligation.
- Producer, brand owners, importer and PWPs need to get registered with State Pollution Control Board/committee or Central Pollution Control Board through CPCB's online portal (if operating in more than 2 states) unless their consent to operate will not get renew.
- Single use plastic (plastic sticks of ice cream, balloon, flags, ear buds, decorative items, spoon, forks, cup, glass, cutlery) will be phased out by July 2022.
- Any plastic packaging which cannot be recycled or used as alternate source of energy will be phased out.
- Multi-layered plastic packaging can be co-processed and used as alternate source of energy in waste to energy, cement kiln, road construction, pyrolysis, and gasification.
- Manufacturers of plastic shall not sell or provide raw materials to any unregistered producer/ processor.
- Recycling of Plastic Waste shall be only as per the IS14534:1998
- Local Body would be responsible for establishing the infrastructure.

Extended Producer Responsibility (EPR) framework

The Ministry released comprehensive guidelines on Extended Producer Responsibility (EPR) for plastic packaging in February 2022, delineating the duties of producers, importers, brand owners, recyclers, and waste processors in EPR implementation. The Plastic Waste Management (PWM) Rules, by means of EPR, assign responsibility to producers, importers, and brand owners (PIBOs).

Coverage of Extended Producer Responsibility

The following plastic packaging categories are covers under Extended Producer Responsibility:

Category	Type
Category I	Rigid plastic packaging
Category II	Flexible plastic packaging of single layer or multilayer (more than one layer with different types of plastic), plastic sheets or like and covers made of plastic sheet, carry bags, plastic sachet or pouches
Category III	Multi-layered plastic packaging (at least one layer of plastic and at least one layer of material other than plastic)
Category IV	Plastic sheet or like used for packaging as well as carry bags made of compostable plastics

Targets for Extended Producer Responsibility

The Extended Producer Responsibility targets for the Producers, Importers & Brand-Owners is as follows:

Eligible Quantity in MT shall be the average weight of plastic packaging material (category-wise) sold in the last two financial years plus average quantity of pre-consumer plastic packaging waste in the last two financial years minus the annual quantity supplied to the entities.

The Extended Producer Responsibility target is as follows:

Year		Extended Producer Responsibility target (as a percentage of eligible quantity - category-wise)
I	2021-2022	25%
II	2022-23	70%
III	2023-24	100%

Obligations for recycling Producers and Importers:

The Producer shall ensure minimum level of recycling (excluding end of life disposal) of plastic packaging waste collected under Extended Producer Responsibility Target, category-wise, as given below namely:

Minimum level of recycling (excluding end of life disposal) of plastic packaging waste
(% of Extended Producer Responsibility Target)

Plastic packaging category	2024-25	2025-26	2026-27	2027-28 onwards

Category I	50	60	70	80
Category II	30	40	50	60
Category III	30	40	50	60
Category IV	50	60	70	80

Obligation of Re-use of Brand Owners:

The Brand Owner using Category I (rigid) plastic packaging for their products shall have minimum obligation to reuse such packaging as given below:

Category Type	2025-26	2026-27	2027-28	2028-29 and onwards
Category I rigid plastic packaging with volume or weight equal or more than 0.9 litre or kg but less than 4.9 litres or kg, as the case may be	10	15	20	25
Category I rigid plastic packaging with volume of weight equal or more than 4.9 litres or kg	70	75	80	85

Obligation for use of recycled plastic content by Producers, Importers & Brand-Owners:

Mandatory use of recycled plastic in plastic packaging
(% of plastic manufactured for the year)

Plastic packaging category	2024-25	2025-26	2026-27	2027-28 onwards
Category I	30	40	50	60
Category II	10	10	20	20
Category III	05	05	10	10

Impact on packaging industry

The EPR regulation is especially prominent to plastic packaging industry, as it puts the onus on plastic packaging waste generators, a broad classification which include plastic packaging manufacturers, brand owners, as well as importers of the product. EPR is applicable to rigid plastic packaging, flexible packaging, and other forms of plastic films.

The mandate to phase out single-use plastics, coupled with requirements for recycled plastic content, will compel the industry to innovate and shift towards eco-friendly materials. The categorization of plastic packaging types under EPR, including flexible plastic packaging of single or multilayer, plastic sheets, carry bags, sachets, and pouches, means that players in the flexible packaging industry need to align their strategies with the outlined responsibilities and targets.

The introduction of EPR guideline is expected to trigger disruptive changes in plastic packaging industry. Plastic films which have the highest level of recyclability or reuse will find increasing demand, in the place of multi-layer packaging.

With this growing awareness and governmental push, the research on eco-friendly and sustainable packaging is steadily on the rise in the country. Sustainability has become a key focus area of many of the packaging solutions manufacturers.

Food Safety and Standards (Packaging) Regulations 2022

In January 2019, the Food Safety and Standards Authority of India (FSSAI) announced new regulations in the domain of food packaging. The Food Safety and Standards (Packaging) Regulations 2022 replaces The Food Safety and Standards (Packaging) Regulations 2018 and 2011 which was regulating food packaging in India.

The new regulations lay out specific guidelines regarding the type of material that could be used for food packaging, the tolerable limit for contaminants in the packaging material, as well as quality compliance standards that must be maintained. In terms of quality standards, the packaging material should adhere to the Indian Standards (IS) listed in schedule I, II and III. In the earlier regulatory regime, this compliance to IS quality standard was not mandatory. While the 2018 regulations had categorically banned the usage of recycled packaging for food packaging in India, the 2022 amendment has made a way for the use of recycled plastic.

This new set of standards would bring much more clarity on the quality standards in Indian flexible packaging material. It is estimated that nearly 70% of flexible packaging material consumed in India for packaging in food & beverage industry. Hence, any regulatory changes with respect to food packaging will have a direct impact on the flexible packaging industry.

The clear definition of quality standards as well as tolerance limits for permissible contaminants will help in improving the quality check landscape in flexible packaging industry. The presence of well-defined guidelines

would help Companies in improving their internal quality purposes to manufacture a product that adhere to the regulatory guidelines. So, it could be commented that the introduction of new regulations would help in improving the quality standards in Indian flexible packaging industry.

Furthermore, the tighter regulations would also lower the demand for low quality imports. There is a fair bit of flexible packaging materials being imported to India, a significant proportion from low-cost destinations, and of sub-standard quality. Tighter quality standards would discourage consumers from opting for those cheaper imports, thereby benefitting the domestic industry.

Major trends in Indian Packaging Industry

The Indian packaging industry is experiencing a dynamic shift driven by evolving consumer preferences, technological advancements, and sustainability imperatives. With a burgeoning market and changing consumption patterns, stakeholders in the packaging sector are navigating a landscape characterized by innovation, efficiency, and environmental consciousness. As one of the fastest-growing sectors in India, packaging plays a pivotal role not only in safeguarding products but also in shaping consumer experiences and influencing purchasing decisions. The key trends that emerge are:

Transition from traditional hard plastics to sustainable alternatives

The packaging industry is undergoing a significant transformation as sustainability becomes a paramount concern for consumers and businesses alike. One of the most notable trends is the *gradual shift away from traditional hard plastics towards more sustainable and environmentally friendly alternatives*. This transition is driven by a combination of consumer demand for *eco-friendly products, increasing awareness of the environmental impact of plastics, and regulatory pressures to reduce single-use plastics*.

Hard plastics, particularly those derived from fossil fuels, have long been a staple in the packaging industry due to their durability and versatility. However, the environmental consequences of their production and disposal have raised concerns globally. These plastics contribute to pollution, take centuries to decompose, and harm marine life. In response to these issues, the packaging industry is exploring and adopting alternative materials that are more sustainable and have a reduced environmental footprint.

One key move in this shift is the development and utilization of bio-based plastics. Derived from renewable resources such as corn, sugarcane, or even algae, these materials offer a more sustainable alternative to traditional plastics. Bio-based plastics have gained popularity as they are biodegradable, reducing the long-term environmental impact associated with traditional plastics. Companies are increasingly incorporating bio-based plastics into their packaging solutions, signalling a commitment to reducing their carbon footprint.

Focus on Recyclability and Circular Economy

Another notable trend is the emphasis on recyclability and circular economy principles. Packaging designed for easy recycling is becoming a focal point for both manufacturers and consumers. Many companies are investing in research and development to create packaging materials that can be efficiently recycled and reintegrated into the production cycle. This approach helps minimize the amount of waste ending up in landfills and encourages a more sustainable, closed-loop system.

Furthermore, the packaging industry is exploring innovative materials like compostable plastics. These materials break down into natural components when exposed to the right conditions, offering an environmentally friendly alternative to traditional plastics. Compostable packaging aligns with the growing interest in reducing waste and promoting a circular economy.

Rise of Flexible Packaging

Another major trend where the packaging industry is witnessing dynamic growth is the emergence of laminates and flexible packaging, particularly PET and woven sacks emerging as the fastest-growing segments. Several trends further shape the industry landscape, including the growth of consumer-packaged goods and the rise of organized retail. Flexible packaging is gaining prominence, offering versatility and sustainability. Metal packaging is also on the ascent, catering to diverse product categories.

Other trends

The packaging landscape encompasses a spectrum of trends and innovations tailored to meet diverse industry needs. While major shifts towards sustainability dominate headlines, several minor trends are also reshaping the packaging sector. From the resurgence of glass packaging in beverage sectors to the rising prominence of Tetra packs in dairy and juice products, the market reflects a nuanced approach towards materials selection.

Beyond materials, advancements in coding and marking technologies, alongside the adoption of aseptic packaging, underscore the industry's commitment to quality control and freshness preservation. Additionally, the surge in recyclable packaging materials and the emergence of innovative formats like vacuum packaging and modified atmosphere packaging highlight a multifaceted response to evolving consumer demands and environmental imperatives.

As the industry continues to evolve, driven by technology, consumer demands, and sustainability considerations, it is positioned for sustained growth. The move from traditional plastics to sustainable alternatives signals a collective commitment to environmental responsibility, driven by consumer demand, awareness, and regulatory pressures. Simultaneously, a focus on recyclability and circular economy principles propels the industry towards sustainable packaging solutions, with the rise of flexible packaging in segments like PET and woven sacks showcasing versatility and sustainability. Beyond these major shifts, the packaging landscape reveals a tapestry of nuanced trends, from the resurgence of glass packaging to advancements in coding technologies and the exploration of innovative formats. The multitude of trends and innovations observed within the packaging industry reflects a dynamic landscape where adaptability, environmental consciousness and technological advancements are key drivers of success in crafting the packaging solutions of tomorrow.

Key Challenges

The packaging industry in India confronts a myriad of challenges that impact its growth and sustainability. They are:

Rapid Changes in Technology: Rapid changes in technology pose a significant hurdle as the industry strives to keep pace with evolving advancements. This necessitates continuous investments in updating machinery and processes, which can strain the financial resources of packaging enterprises.

Shortage And Rising Cost of Raw Materials: A critical challenge is the shortage and rising cost of raw materials. The packaging sector heavily relies on materials like plastics, paper, and metals, and any disruption in the supply chain can lead to increased costs and production delays. According to industry sources, while the prices of essential raw materials like paper and aluminium foil had increased by 70% during the pandemic, carriage charges to foreign countries had also increased fivefold. The escalating costs of raw materials further intensify the financial burden on manufacturers, affecting their competitiveness in the market.

Non-availability of skilled manpower & costly manpower: Non-availability of skilled manpower compounds the industry's challenges. The demand for individuals with expertise in various aspects of packaging, from design to production, often surpasses the available talent pool. This scarcity not only drives up labour costs but also results in a skills gap that can impact overall operational efficiency. Further, Costly skilled manpower adds to this challenge for the packaging industry in India. As technology evolves, the demand for skilled personnel increases, and the industry faces the dual challenge of acquiring and retaining skilled workers. This not only leads to higher labour costs but also contributes to a scarcity of qualified professionals, hindering the seamless functioning of packaging operations.

Lack of Market Access and Exposure to Advanced Technology: A lack of market access and exposure to advanced technology further impedes the progress of the packaging industry in India. Many businesses struggle to access global markets and lack exposure to best management and manufacturing practices. This gap in knowledge and technology hinders the industry's ability to compete on an international scale.

Quality standards: Quality standards are paramount in the packaging sector, yet the industry faces challenges in maintaining a 100% commitment to these standards. Stringent quality control measures are essential for ensuring the safety and integrity of packaged products. However, due to various constraints, including financial limitations and resource scarcity, some companies may fall short of achieving consistent adherence to quality benchmarks.

In conclusion, the packaging industry in India encounters a complex set of challenges ranging from technological shifts to resource scarcity and workforce issues. Addressing these challenges requires a comprehensive approach involving strategic investments, skill development initiatives, and industry collaboration to foster innovation and sustainability.

Competitive Landscape

Nature of Industry

In the Indian packaging machinery industry, competition stands out as a defining characteristic, wherein a number of small, medium and large players are vying for market shares. Small to Mid-size companies like Galaxy Packtech Private Limited and XL Plastics and larger companies like Nichrome India and Uflex Ltd are all involved in domestic as well as international markets, expanding their global presence. Further, the involvement of MNCs significantly influences the industry, bringing in advanced technological expertise and adhering to international standards.

However, the industry presents formidable entry barriers, necessitating capital investment and a robust grasp of cutting-edge technologies. With its capital-intensive nature, the sector demands significant financial commitments in research, modern machinery, and skilled human resources. The competitive environment encourages a perpetual cycle of innovation and enhancements, fuelled by both domestic and international companies competing for market share.

Market companies are also concentrating on technical concepts, like the IoT, automation, & robotics, to improve the working efficiency of their invention offerings. This dynamic industry landscape is characterized by challenges, yet it is continually evolving as companies strive for efficiency and sustainability in their operations.

Profiling of Leading Players engaged Packaging Machinery Segment

Company	Brief
UFlex Ltd (Engineering Business)	Established in 1985, UFlex's Engineering Business is a manufacturing powerhouse specializing in top-notch packaging, printing, and allied machines. With a commitment to high-performance and customized solutions, the company has become a pioneer in providing end-to-end flexible packaging solutions globally. Operating from a sprawling 11-acre plant in Noida, India, UFlex ensures superlative quality standards at every production level. Offering a range of machines, from basic to intricate, the company integrates advanced engineering seamlessly to enhance production efficiency. Recognized globally, UFlex credits its international success to standardization, productivity, and globalization of production and sales systems. With three factories and a focus on sustainability, UFlex remains a reliable force in the packaging industry, driven by innovation and client satisfaction.
Smart Pack India	Founded in 1998, Smart Pack stands as India's leading Packaging Solution provider, offering an extensive range of high-quality machines through its online store.

	Driven by extensive R&D, advanced analytics, and profound domain knowledge, Smart Pack has established itself as a reliable source for innovative packaging solutions. The company was established with a vision to comprehensively address packaging needs and deliver top-notch machines to clients, aiming to reduce quality costs effortlessly. Smart Pack solution include diverse product offerings, including MRP Batch coding Machine, Shrink Packing Machine, Box Strapping Machine, Box Stretch Wrapping Machine, Vacuum Packing Machine, Liquide Filling Machine, Automatic Pouch Packaging Machine, Pouch Sealing Machine, Cup Sealing Machine, PVC Strip Curtains, and more. Additionally, the company provides refundable and replaceable products like Aluminum-foil, Induction wad, Shrink Pouch, PVC Pouch, BOPP Tape, and others. The clientele of Smart Pack extends across the country. Serving various industries such as pharmaceuticals, food processing, agriculture, textiles, pesticides, ceramics, automobiles, and more, Smart Pack prioritizes cost-efficiency, minimized risk, and superb quality as the foundational pillars for its valuable customers.
Nichrome India Ltd	Established in 1977, Nichrome India Ltd has been a pioneering force in next-generation packaging technologies. Headquartered in Pune, India, the company boasts a rich legacy of innovation and manufacturing competency in packaging systems. With a global presence in 45+ countries and over 10,000 successful installations worldwide, Nichrome is a trusted partner for enterprises, offering integrated, automated packaging solutions throughout the complete lifecycle. The company's diverse range of machines caters to various industries: Food Industry includes Snacks & Namkeen Packaging Machine, Ready-to-Eat Food Packaging Machine, Grains & Seeds Packaging Machine, Milk & liquids Packaging Machine, Powder Packaging Machine etc Pharma Industry includes Tablets, Capsules, Granulation, Oral Liquid Dosage, Ophthalmic and Ent, Injectables, Gels etc Non-Food segment includes Agrochemicals, Fertilizer, Adhesive, Lube oil, Varnishes, Coolants, Paint powder, Hardware etc

Mamata Machinery Private Limited	Mamata Machinery Private Limited, headquartered in Ahmedabad, India, is a leading manufacturer of advanced bag and pouch making machinery, including plastic bag machines, sachet packing machines, and zip lock pouch making machines. Established in 1989, Mamata has been at the forefront of providing cutting-edge flexible packaging solutions for over 35 years. The company serves more than 2,500 customers across 90+ countries and operates with a robust network that includes facilities in India and USA. Mamata's product line includes co-extrusion blown film plants, bag making machines, pouch making machines, and advanced packaging machines such as horizontal form fill and seal (HFFS) machines and sachet packing machines. The company is recognized for its innovative approach, being the first Indian company to introduce plastic bag making machines with stepper motor drive and microprocessor controller, eliminating the need for conventional clutch-brake and rack-pinion assemblies. Mamata operates from a state-of-the-art facility in Ahmedabad, India, spanning 450,000 square feet. This facility includes an in-house electronics department, a fully equipped paint shop, and a demo/exhibition centre, with the capacity to produce over 250 machines annually. In the USA, Mamata has two strategic locations: • Montgomery, IL: This facility serves as the pre-sales and after-sales service centre for bag and pouch machines. • Bradenton, FL: This facility focuses on the design and manufacture of advanced horizontal form, fill, and seal pouching machines, as well as multilane sachet packaging machines. Both facilities also function as showrooms for Mamata machines across North, Central, and South America. The company has received numerous export excellence awards and has been honoured as one of the "Best Plastics and Polymers Brands" continuously from 2019 to 2022.
XL Plastics	Established in 1985, XL Plastics has evolved into a prominent player in the plastic converting machinery and printing machinery sector. XL Plastics specializes in the production of various machinery, including Plastic Bag Making Machines, Pouch Making Machines, PVC Label Machines, and Special Purpose Machines.

	The company's Vadodara facility is equipped with cutting-edge CNC machines and specialized tools, enabling comprehensive in-house manufacturing, assembly, and testing across various departments. All crucial machine components are meticulously crafted using the latest technology, ensuring the highest standards of quality for the products. Having successfully executed over 4500 installations in more than 25 countries, XL Plastics takes pride in its global footprint.
Galaxy PackTech Pvt Ltd	Galaxy PackTech Pvt Ltd is in the business of manufacturing Pouch and Bag Making Machines. Established in 2001, they specialise in Automatic High-Speed Pouch making machines, including varieties such as Zipper Pouch, Three-Side Seal Pouch, Shape Pouch, Stand-up Pouch, Woven Fabric Bag, Spout Pouch, and Center Seal Pouch. The company has successfully installed over 1,500 machines in more than 25 countries. Spanning across a sprawling 32,000 sq ft area, their dedicated team of over 100 members drives their commitment to excellence.
Harikrushna Machines Pvt. Ltd.	Established in 1999-2000, Harikrushna Machines Pvt. Ltd. (HMPL) is a leading Indian organization specializing in complete liquid processing and packaging solutions. As a flagship venture of Dave's Group of Companies, HMPL is a trusted solution provider for packaging needs. Engaged in manufacturing and exporting advanced machinery for pharmaceuticals, food & beverages, cosmetics, and more, HMPL maintains a focus on delivering quality machines and reliable after-sales services. Their processing solutions cover liquid oral/syrup manufacturing plants, ointment/ lotion/ cream/ toothpaste manufacturing plants, and application mixer machines for various liquids. Originally starting with sticker labelling machines, HMPL has evolved into a comprehensive provider of tablet liquid processing and packaging solutions.

Co extrusion Blown film Manufacturers.

WINDSOR MACHINES LIMITED

Company Overview
Windsor Machines Ltd, established in 1963, is an Indian manufacturer and exporter of plastic processing machinery. Initially incorporated as Windsor Engineering Pvt. Ltd., the company became a public limited entity in 1964. Headquartered in Ahmedabad, India, Windsor Machines has grown into a significant player in the plastics industry.
Key Products & Services
Windsor Machines Ltd offers a comprehensive range of products focused on plastic processing machinery, including various series of **Injection Moulding Machines** such as the Winpack, Winfit, WinPET, KL and Excel series, designed for diverse applications. In the **Extrusion Machinery category**, they provide **Pipe Extrusion Lines** like the Agile, KTS, CTS and Rapid 60-f/r, as well as **Blown Film Lines** including the Magnate, Baron, Duke and REX. Additionally, they manufacture **Blow Molding Machines** for producing hollow plastic parts. Recognized for their technological advancements and high-quality machinery, Windsor Machines serves various sectors including packaging, automotive and construction.
Key Insights
Windsor Machines Ltd is recognized as one of the few global companies catering to the diverse needs of the plastics processing industry across 65 countries. With an extensive installation base of over 30,000 state-of-the-art machines equipped with the latest technologies, the company has established itself as a leader in the field. Strategic partnerships with global market leaders such as Kuhne GmbH (Germany) and the acquisition of Italtech (Italy).

Rajoo Engineers Limited

Company Overview
Established in 1986 and converted into a public limited company in May 1992, Rajoo Engineers Limited has emerged as a global player in the plastic processing machinery industry. With its headquarters in Gujarat, India, the company has built a strong presence both domestically and internationally, bolstered by a network of strategic partnerships around the world.
Key Products & Services
Rajoo Engineers Limited specializes in manufacturing and exporting a wide range of plastic processing machinery, with a strong focus on blown film lines, sheet lines, and thermoforming equipment. Key product offerings include 7 Layer Blown Film Lines, Downward Extrusion Blown Film Lines, Monolayer Blown Film Lines, Three Layer Blown Film Lines and 5 Layer Blown Film Lines . Additionally, they provide Mono and Multilayer Sheet Extrusion Systems, Hydraulic and Servo Thermoformers and various vacuum forming machines. Their product range also encompasses specialized systems for foam extrusion, pipe extrusion lines, and medical disposables
Key Insights
Rajoo Engineers is a key player in the Indian subcontinent for blown film lines, sheet lines and thermoformers, and holds a prominent position among Asian manufacturers of similar equipment. The company's reputation extends across global markets, with exports contributing to over 50% of its sales. Its machinery is operational in 70 countries, including highly demanding markets such as Germany, Spain and U.K. With 60% of its revenue stemming from repeat orders.

Kabra Extrusion Technics Ltd

Company Overview
Established in October 1982 and listed publicly in May 1989, Kabra Extrusion Technik Limited (KETL), the flagship entity of the Kolsite Group, stands as a key player in the plastic extrusion machinery industry, celebrated for its innovative solutions. Specializing in high-performance extrusion systems for pipe and film manufacturing, the company operates from two advanced manufacturing facilities in Daman. Leveraging cutting-edge R&D and modern processes, KETL has consistently set benchmarks in the plastics extrusion sector, addressing the dynamic needs of global markets.
Key Products & Services
The company operates in the capital goods sector, specializing in the production of plastic extrusion machinery designed for manufacturing a diverse range of plastic pipes, including PVC, HDPE, LDPE, PP, and composite pipes. Today, KET has expanded its focus to include advanced lithium-ion battery packs equipped with Battery Management Systems (BMS), supporting India's transition to green energy storage systems (ESS) and electric vehicle (EV) transportation. Initially established to manufacture twin-screw extruder machines with downstream facilities for producing PVC pipes, profiles, sections and granules, the company began with technical collaboration from Battenfeld Extrusion Technik, Germany.
Key Insights
KET is a part of the Kolsite Group, which has a legacy of 60 years. The Kolsite Group operates eight state-of-the-art manufacturing plants across India. KET's competitive strength lies in its deep understanding of local markets, strong client relationships, and ongoing efforts to enhance its technological capabilities. As of FY24, KET holds a leadership position in the extrusion market with ~40% market share. The company enjoys strong brand loyalty and has a vast customer base across more than 100 export markets.

Shubham Extrusion

Company Overview
Shubham Extrusion, founded in 1997, has a global presence with its blown film plants operating across more than 67 countries and over 3,500 installations worldwide. Leveraging extensive expertise in manufacturing blown film machines, the company provides a strategic edge to the industry. Its proficiency allows it to function as both a supplier and a trusted partner to clients. The highly skilled engineers and design team are dedicated to research and development, emphasizing key factors such as wear resistance and energy efficiency.
Key Products & Services
The company specializes in producing a variety of products, including blown film plants, specialty machines for stretch and cling film production, compounding plants and multi-layer blown film systems. Additionally, Shubham offers essential equipment like haul-off machines and automatic hopper loaders, along with custom solutions tailored to specific customer needs. Committed to innovation and quality assurance, Shubham emphasizes excellent after-sales service.
Key Insights
Shubham Extrusion stands out with its advanced infrastructure, featuring a sprawling 200,000 sq. ft. shop floor and a ceiling height of over 65 feet, facilitating the production of high-throughput lines with capacities up to 1,000 kgs/hr. A dedicated 30,000 sq. ft. zone enables the simultaneous manufacturing of 8–12 such lines. The company emphasizes innovation through its dedicated hub for new product development and technological advancements. Its efficient dispatch system can handle the daily loading of 10 trucks and packing of 4 containers, supported by one of the largest storage and powder coating facilities in the industry. Additionally, Shubham Extrusion is equipped with Industry 4.0-ready solutions.

Windmöller & Hölscher

Company Overview
Windmöller & Hölscher (W&H), founded in 1869 and headquartered in Lengerich, Germany, is a global manufacturer of machinery and systems for the production and converting of flexible packaging. The company specializes in high-performance machines for film extrusion, printing, and converting, serving over 5,000 customers across more than 140 countries.
Key Products & Services
Windmöller & Hölscher (W&H) offers a wide range of high-performance machinery and systems for the manufacturing and converting of flexible packaging. Their key products includes Extrusion (blow film lines, cast film line), printing (CI flexo presses, rotogravure presses) and converting (tuber, bottomer). Additionally, W&H provides winders and stretching lines crucial for film processing. The company also emphasizes expert consultation, engineering services and comprehensive after-sales support to ensure optimal machinery performance. With a focus on innovation and customer-specific solutions,
Key Insights
Windmöller & Hölscher is committed to advancing the "Industry 4.0" vision to meet the evolving demands of their growing market. Since 2015, their digital transformation efforts have been unified under the initiative PACKAGING 4.0, focusing on intelligent machines, seamless process integration, and user-friendly operation. For example, the Film Performance Monitor for the Cast Film Line FILMEX II establishes a comprehensive data network linking all production steps. This enables full transparency throughout the production process while ensuring consistent quality. Customers benefit from complete production control, improved productivity, and superior film performance for downstream processing.

Reifenhäuser GmbH & Co. KG Machine factory

Company Overview
The Reifenhäuser Group, established in 1911 by Anton Reifenhäuser, is a provider of innovative technologies and components for plastics extrusion, headquartered in Troisdorf, Germany. With over a century of experience, the company specializes in manufacturing high-quality blown film, cast film, sheet film, and nonwovens, serving a global customer base.
Key Products & Services
Reifenhäuser GmbH & Co. KG specializes in designing customized machinery and systems for producing high-quality blown film, cast film, sheet film, and nonwovens. The company has developed a comprehensive product portfolio that includes advanced coextrusion blown film plants capable of creating multi-layer films with enhanced properties like superior barrier performance and mechanical strength. In addition, Reifenhäuser offers a range of extruders, coextrusion adapters, dies, and high-wear-resistant screws and barrels, all tailored to meet specific customer needs. Serving a diverse range of industries—including packaging, hygiene, agriculture, and medical applications—the company is committed to sustainability and innovation in its solutions.
Key Insights
The company is known for its innovative technologies and commitment to sustainability in the plastics industry. Reifenhäuser's product portfolio includes modular blown film lines that can produce films with 1 to 12 layers, designed for various applications such as packaging, agricultural films, and technical films with barrier properties. Their EVO series features advanced technologies like EVO Ultra Stretch for recyclable films and EVO Fusion for direct processing of plastic waste into new films.

Macchi S.p.A.

Company Overview
Founded in 1961, Macchi S.p.A. has been at the forefront of technological advancements in blown film extrusion and is now recognized as one of the world's leading manufacturers of blown film lines. From its first patent for a two-layer coextrusion die in 1961 to the development of cutting-edge, wide, multi-layer lines, the company has consistently prioritized productivity, quality, and sustainability in its technological offerings. Macchi's product range is designed to meet diverse customer production needs, offering lines with configurations from 1 to 9 layers and film widths ranging from 800 to 4000 mm.
Key Products & Services
The company specializes in producing a wide range of extrusion lines, offering solutions from monolayer to Coex 7-layer systems, with film widths ranging from 800 to 4000 mm. Macchi's product portfolio includes high-performance blown film lines designed for various applications, including packaging, agriculture and medical uses. They emphasize sustainability and efficiency, integrating advanced automation systems that enhance productivity while reducing energy and labor costs. Additionally, Macchi provides comprehensive after-sales services, ensuring global support through a network of experienced engineers who deliver real-time solutions.
Key Insights
Macchi S.p.A. has launched several groundbreaking innovations in blown film extrusion, including the R-POD FLEX series, an advanced evolution of the POD FLEX system. This system is specifically designed for high productivity and the efficient use of secondary raw materials, such as regenerated or recycled materials. The five-layer R-POD FLEX line is tailored for producing sustainable specialty films with reduced thickness, superior sealing properties and excellent optical and mechanical characteristics. This cutting-edge technology addresses the growing market demand for highly flexible extrusion lines, capable of processing recycled materials at rates of up to 1200 kg/h with a net width of 2500 mm.

Bag and pouch making machines

XL Plastics

Company Overview
Founded in 1985, XL Plastics is a renowned manufacturer of plastic film converting and printing machinery. Over the years, it has become a leading force in the industry, with more than 4,500 installations across over 200 countries. The company has a manufacturing capacity of 2,000 meters and employs a skilled team of over 100 professionals.
Key Products & Services
XL Plastics offers a diverse range of machinery focused on plastic film converting, including various types of plastic bag making machines such as seal bags, T-shirt bags and bottom seal bags. Their product portfolio also features pouch making machines, including three-side seal and stand-up pouches, as well as handle bag making machines like automatic patch handle and soft loop handle variants. Additionally, XL Plastics manufactures PVC shrink label machines for packaging applications and special purpose machines tailored to specific industry needs. Designed to work with materials like LDPE, HDPE, PP, and BOPP, these machines emphasize high-speed production and efficiency, making them suitable for a wide array of applications in the packaging and hygiene sectors.
Key Insights
They have introduced a new product, the SDP 700Z Stand Up & Zipper Pouch Making Machine, which is equipped with a multi-servo system. This machine is capable of handling four different films, each independently registered using a photo cell, thanks to its various servo motors. It can produce either stand-up or zipper pouches from a single sheet with a width of 1400mm.

Galaxy Packtech Pvt Ltd

Company Overview
Galaxy Packtech Pvt. Ltd., established in 2001 and headquartered in Greater Noida, India, is a manufacturer and exporter of automatic high-speed pouch-making machines. The company specializes in producing a variety of pouch types, including zipper pouches, three-side seal pouches, stand-up pouches, and shape pouches.
Key Products & Services
Their key products include automatic high-speed machines for producing zipper pouches, three-side seal pouches, stand-up pouches, and center seal pouches, all designed to enhance usability and shelf appeal. Additionally, Galaxy Packtech offers semi-automatic filling machines, vacuuming and nitrogen flushing machines, automatic wrapping machines, and vertical pouch sealing machines.
Key Insights
Galaxy Packtech Pvt. Ltd. offers several key features in its pouch-making machinery that enhance performance and efficiency. Their machines, such as the GSC 14 PLUS 200 and GS 24 PLUS 200, are designed for high-speed production, capable of producing various pouch types, including center seal, stand-up, and zipper pouches. Notable features include a motorized unwinder for lip control, quad seal pouch making capability without forming plates, and automated cutting and sealing processes that optimize production times

Totani Corporation

Company Overview
Totani Corporation, headquartered in Kyoto, Japan, has been a leading manufacturer of pouch and bag making machinery since its establishment in 1961. Over the past half-century, the company has built a strong reputation for producing high-speed, high-quality machines capable of creating various types of pouches, including three-side seal, stand-up, spouted, reclosable, and unique designs like The Box Pouch.
Key Products & Services
Totani Corporation offers a diverse range of high-speed pouch-making machines tailored to various packaging needs. Their key products include three-side seal pouch machines for standard pouches, stand-up pouch machines that enhance shelf presence, and shaped pouch machines for uniquely designed packaging. They also produce spouted pouch machines for easy pouring of liquids, reclosable pouch machines featuring slider or press-to-close options for convenience, and side gusseted pouch machines that provide additional volume and stability. Additionally, Totani manufactures quad-seal pouch machines for enhanced strength and protection, as well as The Box Pouch, a unique five-panel design that combines the benefits of traditional pouches with the stability of a box structure.
Key Insights
A key product is the Box Pouch Making Machine, which produces the BOX POUCH—a package that, when filled, takes on a box-like shape, enhancing its visual appeal. Totani's proprietary technology enables both high-speed pouch production (up to 120 CPM) and high-quality, high-strength sealing, making it ideal for storing and transporting both solid and liquid contents due to its excellent hermetic sealing. The BOX POUCH supports five-face printing, a unique feature exclusive to this model, and is compatible with most laminated films used in pouches for food and consumer goods. This resource-efficient machine reduces film usage by 12% compared to conventional stand-up pouches with the same capacity.

LEMO Maschinenbau GmbH

Company Overview
LEMO Maschinenbau GmbH, based in Niederkassel, Germany, has been a pioneer in the film packaging industry since its founding in 1949. With over 70 years of experience, the company specializes in designing and manufacturing machines for flexible film packaging, serving various sectors including hygiene, food and beverages, logistics, and industrial packaging.
Key Products & Services
Their product range includes assembly machines and systems, standardized cardboard and bag packaging, robot-based carton packaging, automated sleeve feeders, and similar solutions. They also offer process-automated labeling and tracking, providing complete solutions for comprehensive production processes. Additionally, they specialize in customer-specific research and development, offering tailored packaging solutions for industries such as hygiene, medicine and care, food and beverages, logistics and security, industrial packaging and disposal. They also provide tote bags, manufactured using machines like INTERmat, ROLLOmat, CAPmat and ADDmat.
Key Insights
ADDmat, the bag handling system from LEMO, "Bags in Motion," is built around versatile AUTOpack basic modules. This automation system was specifically designed for various product types to efficiently address the logistical needs of the production line. Our offering includes not only AUTOpack modules for collecting and storing bag packages but also solutions for managing the supply of empty boxes and transporting filled boxes to the central palletizing station.

Hudson Sharp

Company Overview
Hudson Sharp is a manufacturer of machinery for producing plastic bags and flexible packaging. Located in Green Bay, Wisconsin, the company specializes in high-speed plastic bag production technologies, offering a range of machines designed for various types of bags and pouches. With over 100 years of experience in the manufacturing industry, Hudson Sharp was acquired by Thiele Technologies in 2009, a part of Barry-Wehmiller Companies, Inc.
Key Products & Services
Hudson Sharp offers a comprehensive range of products focused on the manufacturing of plastic bags and flexible packaging solutions. Key offerings include high-speed wicket bag machines for producing wicketed bags, versatile pouch machines for various styles like stand-up and side-gusset pouches, and continuous motion machines designed for rapid production of interleaved bags. They also provide flat belt bag machines in multiple widths for simple plastic bags and bottom seal machines tailored for heavy wall pouches.
Key Insights
The INNO-LOK system, patented by Innoflex Technologies, was developed in collaboration with The Hudson-Sharp Machine Company. INNO-LOK® Pre-Zippered Film is a patented product and method for applying reclosable fasteners transversely to packaging films, resulting in a roll of pre-zippered film. Improve the efficiency of your bag-making equipment with reclosable features today.

Packaging machines

Pakona Engineers Pvt Ltd

Company Overview
Pakona Engineers Pvt. Ltd., established in 1982 by Mr. Ashok J. Kothari, is an Indian manufacturer specializing in packaging and concrete machinery. Initially focusing on packaging machines, the company has broadened its product range to include various concrete production equipment. In 2011, Pakona began manufacturing Horizontal Form/Fill/Seal Machines through a technical collaboration with SN Maschinenbau GmbH, Germany.
Key Products & Services
Pakona Engineers Pvt. Ltd. offers a diverse range of packaging machinery tailored to various industries, including food, pharmaceuticals, and construction. Key products include Horizontal Form Fill Seal Machines for producing various pouch types, Vertical Form Fill Seal Machines for efficient packing of powders and granules, and specialized machines for spice and confectionery packaging. They also manufacture cartoning machines for automated packing into cartons, balers for compressing materials, and automatic bottle and jar filling lines for liquid products. Additionally, Pakona provides turnkey packaging solutions that integrate multiple processes from filling to cartoning.
Key Insights
Pakona regularly upgrades its technology to enhance machine efficiency and speed, exemplified by their Continuous Motion Vertical Form Fill Seal machines capable of producing up to 120 pouches per minute. Secondly, Pakona offers a comprehensive range of packaging solutions, including vertical and horizontal form fill seal machines, cartoning machines, and turnkey packaging lines, catering to diverse industries such as food, pharmaceuticals, cosmetics, and agrochemicals. The company's commitment to quality is reflected in its ISO 9001 certification and its status as the largest exporter of packaging machines in India, with installations in over 80 countries

Nichrome Packaging Solutions

Company Overview
Nichrome Packaging Solutions is a prominent Indian manufacturer of innovative packaging machinery, established in 1948 and recognized for its pioneering contributions to the packaging industry. The company is particularly noted for developing India's first milk pouch packaging machine in the 1970s and has since expanded its product range to include advanced Vertical Form Fill Seal (VFFS) and Horizontal Form Fill Seal (HFFS) machines.
Key Products & Services
Nichrome Packaging Solutions offers a comprehensive range of products designed to meet diverse packaging needs across various industries. Key offerings include Vertical Form Fill Seal (VFFS) machines, such as the Filpack Servo series for liquid packaging and the Excel series for powders, and Horizontal Form Fill Seal (HFFS) machines for efficient packaging of snacks and dairy powders. The company also provides integrated bottle and jar filling lines for liquids, bulk bag filling lines for larger volumes, and Blow Fill Seal (BFS) lines for aseptic packaging. Additionally, Nichrome offers secondary packaging solutions, including vertical and horizontal cartoners, case packers, and palletizers, which can be seamlessly integrated into primary packaging systems.
Key Insights
The FILPACK CMD Alpha packaging solution is a Vertical Form Fill Seal (VFFS) machine designed for milk and other liquids. Its compact design is notably shorter than conventional machines, allowing it to occupy less floor space since no side opening is needed. The impulse seal system is powered by solid-state control technology, and it features a uniquely designed film roll unwinding mechanism for smooth bag pulling. The FILPACK CMD Alpha is equipped with twin heads, enabling simultaneous packaging of two different products. Additionally, maintenance can be performed on one track while the other continues to operate.

Pace Packaging Machines Pvt. Ltd

Company Overview
Pace Packaging Machines Pvt. Ltd., based in Ahmedabad, India, specializes in manufacturing high-quality Vertical Form Fill Seal (VFFS) machines that meet international standards. The company is committed to precision engineering, utilizing advanced electronic and pneumatic components in its machines.
Key Products & Services
The primary focus is on VFFS machines, which are essential for various packaging applications. These machines are designed for efficiency and reliability, making them suitable for diverse industries. Beyond manufacturing machines, Pace Packaging also designs and supplies related accessories such as platforms, elevators, feeders, and conveyors. This positions them as a single-source provider for packaging solutions.
Key Insights
Pace Packaging boasts a modern facility equipped with the latest technology, allowing for comprehensive research and development. This enables them to produce machinery that competes with leading global brands while maintaining cost-effectiveness.

Bartelt Packaging, LLC

Company Overview
Founded in 1941, Bartelt Packaging is a prominent manufacturer of packaging machinery headquartered in Sarasota, Florida. The company offers top-tier solutions for pouching, cartoning, shrink wrapping, overwrapping, and case/tray packing. Bartelt Packaging encompasses the Bartelt, Kayat, and Scandia product lines, providing complementary packaging solutions across various industries. Additionally, Bartelt serves as the North American master distributor for FLtècnics rollstock and pre-made pouch machinery. The company serves a wide range of industries, including food and confectionery, beverage, home and personal care, pharmaceuticals, chemicals, and tobacco.
Key Products & Services
Bartelt Packaging offers a diverse range of key products designed to meet various packaging needs across multiple industries. Their primary offerings include Horizontal Form Fill Seal (HFFS) machines, which are capable of producing a wide variety of pouch types such as sachets, shaped pouches, bottom gusseted pouches, and stand-up pouches for both dry and liquid products. Additionally, Bartelt provides cartoning systems under the Scandia brand, which cater to automatic and manual loading applications for various products. The company also specializes in shrink wrapping and case packing solutions through its Kayat product line, which includes high-speed shrink wrappers and wrap-around packers.
Key Insights
Bartelt Packaging is recognized as the world's first developer of intermittent motion horizontal form fill seal (HFFS) pouching machines, having introduced this innovative technology in 1949. This pioneering achievement established Bartelt as a leader in automated packaging solutions, particularly for creating a variety of pouch formats. Bartelt continues to innovate in the field with advanced models like the MAG Series, K-Series, and RPM Series, which offer high-speed operation and flexibility for various applications.

Bossar (SIG)

Company Overview
Founded in 1992 in Barcelona, Bossar Packaging is a leading manufacturer of Horizontal Form Fill Seal (HFFS) machines, known for its innovative contributions to the packaging industry. In March 2021, Bossar was acquired by Scholle IPN. This acquisition enabled Scholle IPN to strengthen its presence in the global flexible packaging market while preserving the Bossar brand and its operational base in Barcelona, Spain. Since the acquisition, Bossar continues to operate under Scholle IPN, focusing on delivering innovative packaging solutions while upholding its commitment to sustainability and cutting-edge technology in packaging machinery.
Key Products & Services
Company Offers variety of machines such as HFFS Horizontal Form Fill Seal machines are packaging machines in which the forming, filling, and sealing of the package take place on the same line. Filling occurs through the open-top part of the pouch, Hybrid This concept separates Pouch forming and sealing steps, from the filling process. Filling occurs through the spout and Pre made Keep it simple. Get your pouches and fill them with your product. Pouches on rail systems provide brands with a low-barrier entry to the spouted pouch market compared to form-fill-seal operations and there applications are in Food packaging, beverage packaging, non food pacakaging and Aseptic Packaging
Key Insights
The company offers a range of machines, including HFFS (Horizontal Form Fill Seal) machines, which combine the forming, filling, and sealing processes into a single line. Filling is done through the open top of the pouch. The Hybrid model separates the pouch forming and sealing steps from the filling process, with filling occurring through the spout. The Pre-made pouch system allows for easy filling by simply using pre-made pouches. Pouches on rail systems offer brands a low-barrier entry into the spouted pouch market compared to form-fill-seal operations. These machines are used in food packaging, beverage packaging, non-food packaging, and aseptic packaging.

Mespack

Company Overview
Mespack Packaging, based in Barcelona, Spain, is a leading manufacturer of flexible packaging machinery, specializing in both horizontal and vertical form-fill-seal (HFFS and VFFS) machines. Founded with a focus on innovation, Mespack has created a wide range of products tailored to meet the packaging needs of various industries, including food, pharmaceuticals, and personal care. In 2015, the company was acquired by Duravant, a global provider of engineered equipment serving the food processing, packaging, and material handling industries.
Key Products & Services
Mespack offers a wide range of innovative packaging machines tailored for flexible packaging applications across various industries. Their key products include Horizontal Form Fill Seal (HFFS) machines for high-speed pouch production, suitable for liquids, powders, and granules in formats like stand-up pouches and sachets. They also provide Vertical Form Fill Seal (VFFS) machines for efficient production of stick packs and sachets. Additionally, Mespack specializes in water-soluble pod machines, addressing the demand for sustainable packaging solutions. Their offerings extend to end-of-line packaging solutions, including cartoning and case packing systems. With the integration of advanced technologies like watttron's digital sealing technology, Mespack enhances efficiency and reduces waste during the sealing process.
Key Insights
The Mespack H360 is a specialized doypack machine designed for stand-up pouches with top or corner spouts and straw applicators. This beverage packaging equipment can achieve an output of up to 260 pouches per minute. The HF Series features one, two, or four lines to simultaneously load spouts into pre-made pouches, and it has been recently developed for the beverage industry, specifically for recyclable pouches.

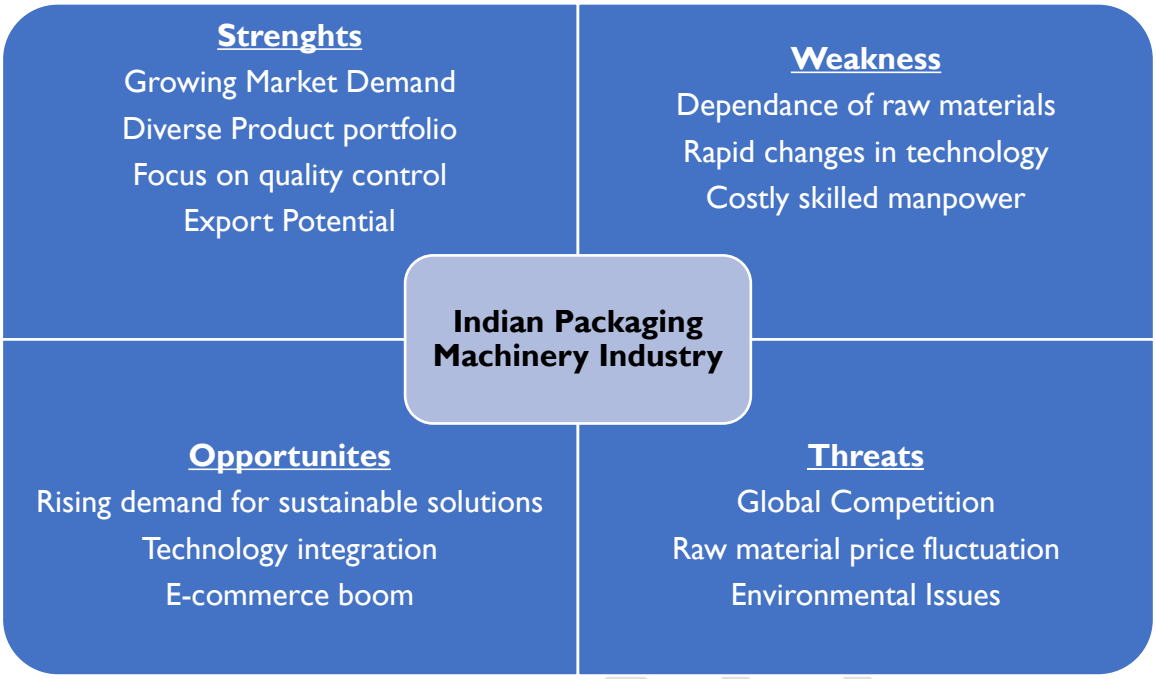
Syntegon Technology GmbH

Company Overview
Syntegon was initially founded in 1969 as Robert Bosch Apparatebau GmbH. In 2020, it became independent from the Bosch Group and rebranded as Syntegon. With a legacy of over 160 years, the company traces its roots to the founding of Geiger & Hesser in 1861, which has been part of Syntegon since the 1970s. Today, Syntegon operates in nearly 20 countries worldwide and is a reliable partner to the pharmaceutical and food industries.
Key Products & Services
Syntegon Technology GmbH offers a comprehensive range of key products and services primarily focused on the pharmaceutical and food industries. Their portfolio includes processing and packaging machinery for both liquid and solid pharmaceuticals, such as systems for filling, inspection, and packaging of syringes, ampoules, tablets, and capsules. In the food sector, Syntegon provides solutions for various products including dry foods, confectionery, frozen foods, and dairy items. The company emphasizes sustainability by developing energy-efficient machines and sustainable packaging solutions. Additionally, Syntegon offers turnkey solutions, encompassing project management from initial design to installation, along with a robust service portfolio that includes lifecycle support, spare parts management, and digital line optimization.
Key Insights
The company has portfolio of over 2,100 patents and applications, showcasing its strong emphasis on research and development, supported by around 1,400 employees dedicated to innovation. Syntegon has been a pioneer in several technologies, including the first fully automatic capsule filling machine and the introduction of linear motor technology in horizontal packaging machines, enabling rapid reconfiguration to new formats at the push of a button. Through its collaboration with leading pharmaceutical companies like Bayer, Syntegon has contributed to the development of continuous manufacturing processes for oral solid dosage forms, setting new industry benchmarks.

ROVEMA GmbH

Company Overview
ROVEMA GmbH, founded in 1959 and headquartered in Fernwald, Germany, is a leading manufacturer of packaging machines and systems, particularly known for its expertise in Vertical Form Fill Seal (VFFS) technology. With over six decades of experience, ROVEMA has developed a reputation for innovation and quality in the packaging industry, providing customized solutions that cater to the complex demands of modern packaging needs.
Key Products & Services
ROVEMA GmbH offers a diverse range of key products designed for efficient and flexible packaging solutions across various industries. Their primary offerings include Vertical Form Fill Seal (VFFS) machines, which pack products into flexible bags with high output rates, capable of producing various bag shapes and sizes. The company also provides filling systems tailored for different product types, including volumetric and weighmetric filling solutions for solids and liquids. Additionally, ROVEMA manufactures cartoning machines that support bag-in-box packaging and direct filling of unpacked products into cartons. Their check weighers ensure accurate filling and compliance with quality standards, while their end-of-line solutions encompass systems for case packing, palletizing, and other final packaging processes.
Key Insights
In 2022, ROVEMA GmbH made significant advancements, including expanding its industry-specific product range, such as recyclable paper and plastic solutions for frozen foods. They also introduced packaging solutions made from renewable materials, like the ROVEMA SUP stand-up pouch made from sealable kraft paper. Additionally, ROVEMA launched a new valve applicator for button valves, resulting in a 30% performance boost for the coffee industry. The company also relaunched the ROVEMA SBS for fragile products, achieving a 35% increase in output by enabling continuous-mode empty bag production.

Industry SWOT Analysis



Strengths

- **Growing Market Demand**: The packaging machinery industry benefits from a robust and expanding market demand, fuelled by various sectors such as FMCG, pharmaceuticals, and e-commerce. This growth creates opportunities for manufacturers to scale operations and diversify their product offerings to meet evolving needs.
- **Diverse Product Portfolio**: Having a diverse product portfolio enables companies to cater to a wide range of industries and applications. This versatility enhances competitiveness and allows manufacturers to capture opportunities in different market segments, contributing to sustained revenue streams.
- **Focus on Quality Control:** Highlighted emphasis on quality control is leading to superior product quality, improving the reliability and performance of packaging machinery. This is helping in building trust among customers and maintaining a positive industry reputation.
- **Export Potential:** The export potential of the industry signifies an opportunity for manufacturers to tap further into international markets. The industry boasts strong technical capabilities, with indigenous expertise and the adoption of advanced technologies. By leveraging their expertise and reputation, companies can explore and capitalize on the demand for quality packaging machinery globally, expanding their reach and market share.

Weaknesses

- **Dependence on Raw Materials:** Heavy reliance on specific raw materials exposes the industry to supply chain vulnerabilities and price fluctuations. Diversification of sourcing strategies and exploring alternative materials can mitigate these risks and enhance resilience.
- **Rapid Changes in Technology:** The rapid pace of technological advancements poses a challenge for companies that may struggle to keep up. Continuous investment in research and development, along with strategic partnerships, is essential to stay at the forefront of technological innovation.
- **Costly Skilled Manpower**: The need for skilled manpower at a high cost can impact overall operational expenses. Companies should invest in training programs, technology adoption for process efficiency, and strategic workforce planning to mitigate this weakness.

Opportunities

- **Rising Demand for Sustainable Solutions:** The increasing awareness and demand for sustainable packaging solutions present an opportunity for manufacturers to develop and promote eco-friendly machinery. Investing in research and innovation aligned with sustainable practices can position companies favourably in the market.
- **Technology Integration:** Integrating Industry 4.0 technologies and IoT into packaging machinery offers opportunities for enhanced efficiency, predictive maintenance, and data-driven decision-making. Companies embracing technological integration can gain a competitive edge and meet evolving customer expectations.
- **E-commerce Boom:** The booming e-commerce sector provides a niche for packaging machinery suppliers to tailor solutions to the specific needs of online retail packaging. Customizing products for the e-commerce segment can lead to new business opportunities and partnerships.

Threats

- **Global Competition**: Intense global competition requires Indian manufacturers to continuously innovate and offer cost-effective solutions. The presence of established global players necessitates a strategic approach to maintain competitiveness and market share.
- **Raw Material Price Fluctuation**: Fluctuations in raw material prices can impact manufacturing costs and profit margins. Adopting agile procurement strategies, negotiating long-term contracts, and exploring alternative materials can help mitigate the impact of price fluctuations.
- **Environmental Issues**: Increasing environmental concerns and regulations pose a threat to traditional packaging practices. Companies need to proactively address environmental issues by developing eco-friendly solutions, recycling initiatives, and adopting sustainable manufacturing practices to align with changing consumer preferences and regulations.

Financial Analysis of Key Sample Companies

Year	Raw Material Cost	Power & Fuel	Salaries & Wages	SGA Expenses	Interest Expense	PBDIT Margin	Net Margin
FY 2020	58.9%	0.7%	20.5%	3.6%	1.2%	11.3%	5.1%
FY 2021	51.8%	0.6%	19.1%	2.6%	1.2%	8.5%	3.0%
FY 2022	57.3%	0.4%	15.5%	3.9%	0.9%	12.3%	6.2%
FY 2023	58.0%	0.4%	15.8%	3.9%	0.9%	9.9%	4.9%
FY 2024	49.7%	0.3%	14.2%	2.8%	0.7%	6.5%	5.7%

Source: CMIE Prowess IQ, Dun & Bradstreet Research, Based on a Sample of 3 Companies

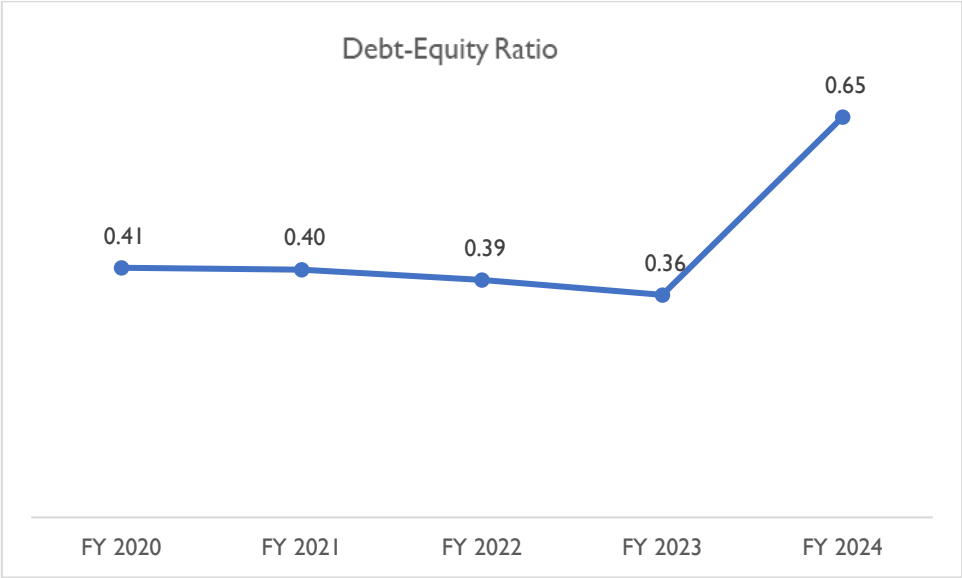
Consolidated net sales of the sample companies displayed a healthy CAGR of 16.7% between FY 2024 - FY 2024 on the back of rise in sales of F&B, Pharma, and FMCG companies. In the packaging machinery industry, raw material costs form the largest cost heads, ranging between 58.9% - 49.7% during the given period. These machines, majorly made up of steel, experienced significant rise of approximately 40% in FY 2021 in terms of raw material costs.

This increase in raw material costs, particularly steel, can be attributed to the surge in global iron ore prices. The 60% rise in iron ore prices from end-2020 to June 2021, reaching a 10-year high at USD 214 per tonne, directly impacted the cost structure of packaging machinery companies. This spike in iron ore prices was driven by strong global demand, particularly from robust export demand, coupled with reduced inventories at mines, tightening the overall supply.

With this, raw material expenses have accounted for 49.7% of the consolidated revenue in FY 2024. Salary & Wages, increasing at a CAGR of 6.4% between FY 2020 – FY 2024. The profitability in the packaging machinery segment declined as a percentage of sales in FY 2024, clearly reflecting in the sample of companies considered. This could be attributed to several factors including increased raw material expenses, Salary & Wages, SGA Expenses and Power & Fuel.

Ratio Analysis

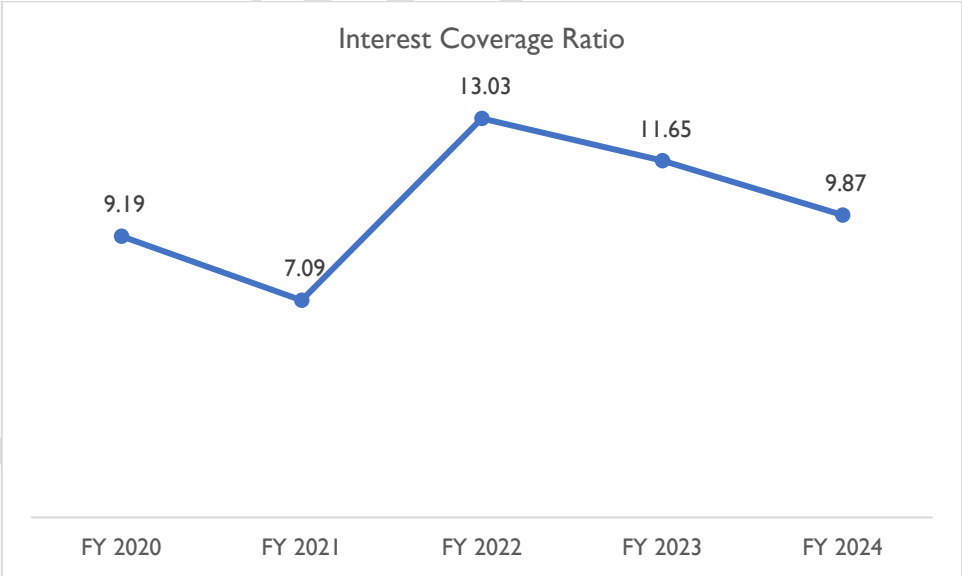
Debt Equity Ratio



Source: CMIE Prowess IQ, Dun & Bradstreet Research, Based on a Sample of 3 Companies

Consolidated debt equity ratio of sample packaging machinery companies has exhibited a growth from the level of 0.36 times to 0.65 times over the last five years yet continuing to remain in the moderate range. The ratio declined from 0.39 times in FY 2022 to 0.36 times in FY 2023 where the consolidated debt increased by approximately 1.07% on y-o-y basis.

Interest Coverage Ratio



Source: CMIE Prowess IQ, Dun & Bradstreet Research, Based on a Sample of 3 Companies

Sample companies considered for financial analysis operated with healthy interest coverage ratio. Consolidated ICR of sample companies exhibited a minor decline in FY 2024 to 9.87 times from 11.65 points in FY 2023.

Mamata Machinery Private Limited

Introduction

Mamata Machinery Private Limited, established on April 17th, 1979, specializes in producing and exporting machinery for plastic bag and pouch manufacturing, as well as packaging and extrusion equipment. The company provides packaging solutions for the flexible packaging industry, including automatic Horizontal Form Fill and Seal (HFFS) pouching machines, as well as vertical multilane sachet packaging machines for smaller volume requirements. Additionally, Mamata Machinery designs and produces microprocessor control systems tailored to its bag/pouch making equipment, all manufactured and tested in-house.

The company promotes its machines under the trademark "Vega" and provides a variety of over 25 machine types. It also handles yearly repair and maintenance agreements for its supplied machines and operates within the aftermarket sector.

The Company is a part of the Mamata Group of companies. The group companies are engaged in providing wide range of services ranging from renewable energy equipment, travel agency services, manufacturing of bottling line/packaging plants, etc. and enjoy several financial and operational synergies with each other.

Product Portfolio

Machines	Types		
Converting Machines	Side Seal Bag Machines	Universal Bag Making Machines	Bottom sealing machine with flying knife
	Servo Wicketers	In Line Pouch and Spout Making System	Pouch Making Machines
	Back Seam Woven Sack Maker	Special Purpose Machines	Non-Woven Fabric Bag Makers
Packaging Machines	Horizontal Form-Fill-seal (HFFS) Pouch Machines	Pick-Fill- Seal Machines	Multi-lane Sachet Packaging Machines
	PFS-250 6 Station Pre-Made Pouch Filing Machine	Vertical Form Seal-VFC 230	-
Blown Film Plants	5,7- & 9-Layer Lines	3-Layer Film Lines	Monolayer Lines

Manufacturing Capabilities

The company's corporate headquarters are situated in Ahmedabad, Gujarat. Both the manufacturing plant and registered office are located in Moraiya, Sanand, Gujarat. Spanning an area of 450,000 square feet, the manufacturing facility includes an in-house electronics department, a demo/exhibition center, and a fully equipped paint shop. With a manufacturing capacity of 300 machines per year, the company also operates a facility in Bradenton, Florida, USA, focused on product application, R&D needs, and limited customizations for machinery sold in the USA. Additionally, there is a facility in Montgomery, Illinois, USA, dedicated to pre-sales and after-sales service for Bag/Pouch Machines.

Shareholding Pattern

Shareholding Pattern as on 31st March 2023	
Particulars	**Percentage Held**
Mamata Group Corporate Services LLP	27.86%
Mahendra Narsinhbhai Patel	22.27%
Mamata Management Services LLP	20.63%
Bhagwatiben C Patel	14.28%
Nayana Mahendra Patel	8.92%
Chandrakant Baldevbhai Patel	2.34%
Others	3.70%

Geographical Spread

The Company caters to both domestic as well as the international market. In FY 2023, Mamata Machinery derived 65.60% of the revenue through exports and balance was contributed by domestic market. So far, the company has installed more than 5,000 machines across more than 90 countries over the years.

Export Market

Mamata Machinery exports to countries such as the United States of America (USA), United Arab Emirates (UAE), Mexico, United Kingdom, France, Italy, Poland, Denmark, Russia, Greece and some Commonwealth of Independent States (CIS) countries.

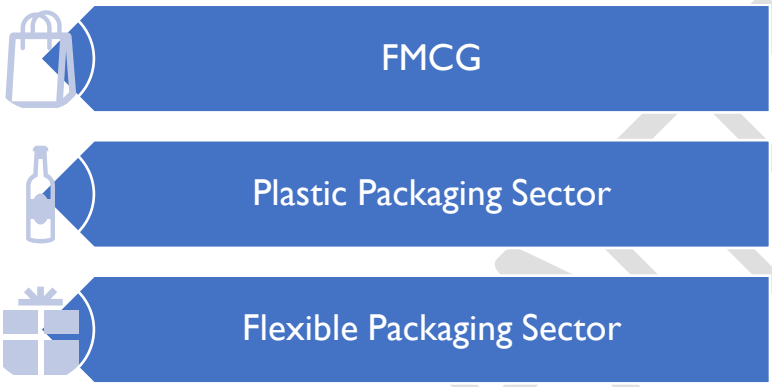
Others include Portugal, Canada, Poland, Morocco, United Kingdom, Italy, Denmark, Romania, Oman, France, Ivory Coast, Armenia, Hong Kong, Saudi Arabia, Greece, Guatemala, Spain, Honduras, Kuwait, Senegal, Tanzania, Bosnia and Herzegovina, Malawi, Zambia, Bangladesh, Nepal, Kenya, Others.

Import Countries

The company majorly imports through United States of America, Japan, Turkey, Germany, and China. Others include Italy, Taiwan, Israel, Switzerland, Denmark, Nederland, Canada, Thailand, Australia and England.

Customer Segments

Most of its customers belong to FMCG industry.



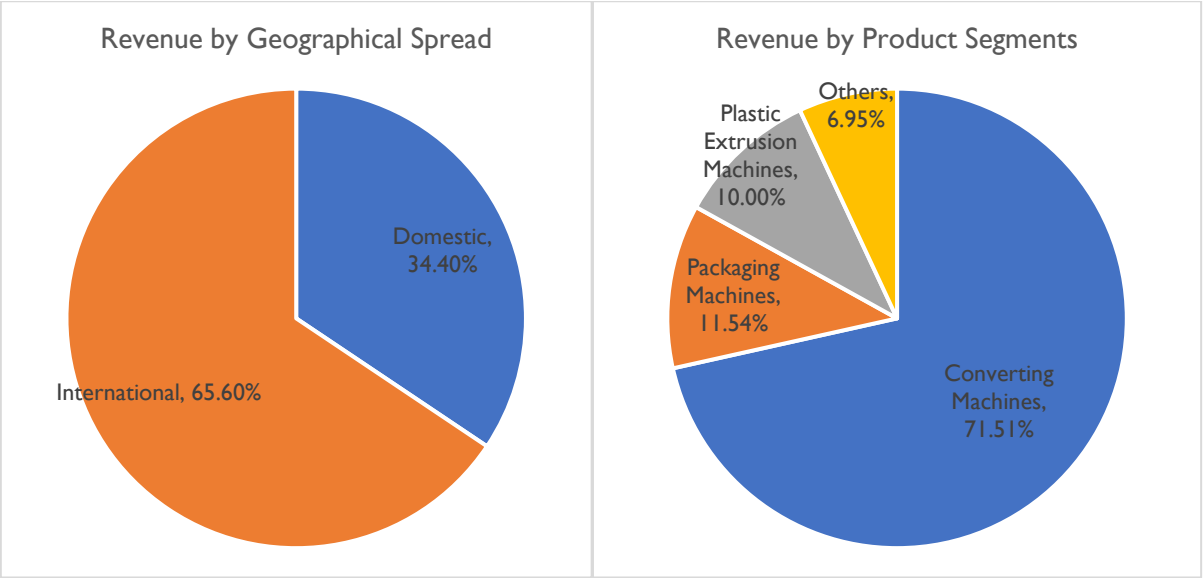
Revenue

In FY 2023, the company recorded a revenue of INR 1,577,181 thousand, and a net profit of INR 120,463 thousand.

Revenue by Geographical Spread

Mamata Machinery's major revenue comes from its international sales in the United States of America (USA), United Arab Emirates (UAE), several European and CIS countries. The total revenue from its international sales accounted for 65.50% (equal to approximately INR 1,034,631 thousand) of the revenue.

The company's domestic sales account for 34.40% (equal to approximately INR 542,550 thousand) of the revenue.



Revenue by Product Segments

The Company's legacy business of manufacturing converting machines (bag making machines) contributed 71.51% of the total revenues in FY 2023, followed by 11.54% by packaging machines and 10.00% by plastic extrusion machines. While the balance 6.95% of the revenue was contributed by others, inclusive of sale of spares & attachments and after sales services

Awards & Certifications

The Company has received the following certifications:

Certification Name	Details
ISO 9001:2008	The Company has been awarded ISO 9001:2008 certification from Bureau Veritas Certification for adhering to the requirements of the management system.
ISO 9001:2015	The Company has been awarded ISO 9001:2015 certification from Bureau Veritas Certification Holding SAS for design, manufacture, installation and service of plastic bag making machines & their attachments, pouch making machines & their attachments, sachet packaging machines & their attachments.

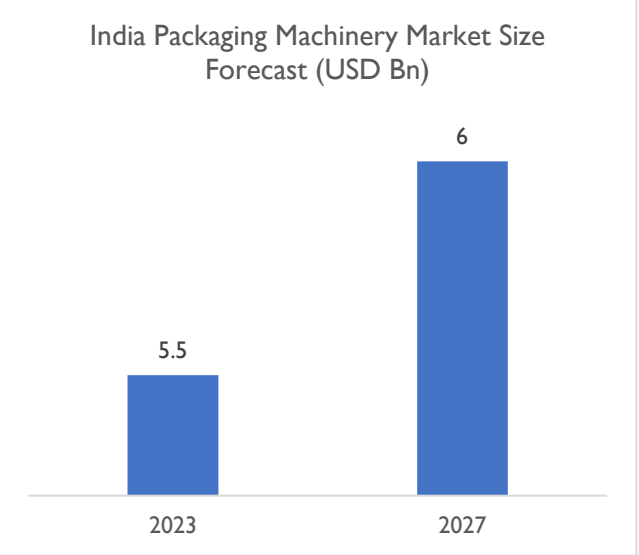
Other	The Company is recognized as an approved R&D center/unit by the Department of Scientific and Industrial Research in FY 2018.

Mamata Machinery is a 4-time winner of 'The Best Plastics and Polymers Brands Award'. It has consecutively won the award between 2019 – 2022. Thus, it encompasses the following:

Growth Outlook

The Indian economy is experiencing robust growth, fuelled by increasing consumption patterns across various sectors. Supported by rising income level and changing lifestyle, there is noticeable uptick in consumer spending that is significantly contributing to the country's economic expansion. Against this backdrop, key industries are experiencing remarkable growth. The e-commerce sector, boasting a Gross Merchandise Value surpassing approximately USD 55 billion in 2022, is projected to achieve an annual Gross Merchandise Value of USD 350 billion by 2030. Simultaneously, the food and beverage industry, constituting approximately 3% of India's GDP, is on a trajectory to reach USD 505 billion by 2027 from USD 322 Bn in the year 2022. Further, other key user segments such as FMCG and Pharma are also expected to benefit from the growth in the economy.

The expansive growth in these industries inherently leads to an increased demand for packaging. E-commerce relies heavily on efficient packaging for the safe delivery of products. The food and beverage sector requires innovative and secure packaging solutions to meet consumer expectations. Similarly, the FMCG and pharmaceutical industries necessitate reliable packaging to preserve product integrity and ensure safety. Thus, the packaging industry is expected to rise to nearly USD 209 Bn by 2025.



As the demand for packaging escalates across these thriving sectors, there is a subsequent surge in the requirement for packaging machinery. According to third-party estimates, the India Packaging Machinery Market is expected to increase from USD 5.5 Bn in 2023 to USD 6 Bn by 2027.

The need for advanced, efficient, and adaptable packaging solutions drives investments in packaging machinery. This symbiotic relationship between industry growth and packaging machinery shows the vital role played by the packaging sector in supporting and advancing various segments of the Indian economy.

Financial Performance

Expense Snapshot

	Raw Material	Power & Fuel	Salary & Wage	SG&A	Interest
FY 2020	58.9%	0.7%	20.5%	3.6%	1.2%
FY 2021	51.8%	0.6%	19.1%	2.6%	1.2%
FY 2022	57.3%	0.4%	15.5%	3.9%	0.9%
FY 2023	58.0%	0.4%	15.8%	3.9%	0.9%
FY 2024	58.4%	0.3%	14.2%	16.1%	0.9%

The flexible packaging machinery industry has witnessed varying cost trends over the last five years, as demonstrated by key financial performance metrics from FY 2020 to FY 2024. Companies like Nichrome, Omori, and Wimco have been adapting to changing market dynamics while maintaining competitive cost structures.

Raw material costs have consistently been a major component of overall expenses, fluctuating slightly but staying in the range of 51.8% to 58.9% of total expenses. The rising demand for flexible packaging, especially in industries like food and pharmaceuticals, has driven these firms to optimize their supply chains and production processes to manage the volatile costs of raw materials. Despite these challenges, these companies have remained agile, adjusting to external market pressures while maintaining growth.

Another key trend observed in the financial performance is the slight reduction in power and fuel costs, declining from 0.7% in FY 2020 to 0.3% by FY 2024. This reflects a shift toward more energy-efficient operations, which have allowed companies like Nichrome and Omori to optimize production costs without compromising quality. On the other hand, salary and wage expenses have seen a gradual decrease from 20.5% in FY 2020 to 14.2% in FY 2024. This trend indicates enhanced operational efficiency and potential automation across the industry. Maintaining competitiveness in the face of rising labour costs has been a key focus for these companies, especially as they look to expand their market share in the growing global flexible packaging sector.

One significant development is the spike in SG&A (Selling, General & Administrative) expenses, especially in FY 2024, where they surged to 16.1%, compared to just 3.6% in FY 2020. This sharp increase suggests that companies like Wimco are investing heavily in marketing, customer service, and administrative functions to strengthen their market positioning and adapt to evolving customer demands. The consistent interest expense over the years, remaining around 0.9% to 1.2%, indicates stable financial management and prudent borrowing practices within the sector. As the flexible packaging machinery market continues to grow, these companies are positioning themselves to capitalize on new opportunities while navigating the challenges posed by rising SG&A expenses and fluctuating raw material costs.

Profitability Margins

	Operating Profit Margin	Net Profit Margin
FY 2020	8.6%	5.1%
FY 2021	5.5%	3.0%
FY 2022	9.5%	6.2%
FY 2023	7.5%	4.9%
FY 2024	8.9%	5.7%

The financial performance of the flexible packaging machinery industry reveals significant trends in operating and net profit margins over the five-year period from FY 2020 to FY 2024. The Operating Profit Margin began at 8.6% in FY 2020, dropped to 5.5% in FY 2021, and rebounded to 9.5% in FY 2022. The decline in FY 2021 can be attributed to pandemic-related disruptions, which negatively impacted production and supply chains. However, the industry demonstrated strong recovery, with operating margins stabilizing at 8.9% in FY 2024, as companies like Nichrome, Omori, and Wimco optimized operations and adjusted to new market dynamics. This rebound reflects improved operational efficiencies and cost control efforts to mitigate the impact of fluctuating raw material prices.

In terms of Net Profit Margins, the industry followed a similar pattern. Starting at 5.1% in FY 2020, net margins dropped to 3.0% in FY 2021 due to the economic downturn but improved to 6.2% in FY 2022. By FY 2024, the net profit margin reached 5.7%, signalling the sector's ability to recover from external challenges and maintain profitability. These trends highlight the industry's resilience, with companies leveraging better cost management and strategic pricing to boost profitability despite increasing selling, general, and administrative (SG&A) expenses. The consistent improvement in both operating and net margins positions the flexible packaging machinery sector for sustained growth in the coming years.