FROST & SULLIVAN

Video Surveillance and Security Market in India

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1. Global Economic Trends

1.1. Economic overview

Global growth, while stable through 2024, proved to be underwhelming, and the economic landscape has since undergone a profound transformation as governments worldwide reorder policy priorities. A significant development has been the series of new tariff measures initiated by the United States, met with countermeasures from its trading partners. These actions have culminated in near-universal US tariffs by early April 2025, elevating effective tariff rates to levels unobserved for a century. This constitutes a major negative shock to growth prospects. The unpredictable way these measures have unfolded further weighs on economic activity and the overall outlook, making it exceptionally challenging to establish a consistent basis for projections.

The swift escalation of trade tensions, coupled with an unprecedented surge in policy uncertainty, is exerting considerable and broad-based pressure on global economic activity. Consequently, the global growth outlook has been significantly downgraded, reflecting the direct effects of these new trade measures and their indirect spillovers through trade linkages, heightened uncertainty, and deteriorating sentiment. This marked deceleration pulls projected growth well below historical averages and represents a notable cooling from earlier expectations. Advanced economies are experiencing a distinct slowdown as these headwinds impact key growth engines, with greater policy uncertainty and direct trade frictions tempering demand momentum in major economies like the United States, while the euro area also navigates a more subdued growth path. Similarly, emerging market and developing economies confront a more challenging environment, with significant downward revisions for those most exposed to the new trade measures or reliant on global trade, complicating their growth trajectories. The disinflation process has also become more intricate, with inflationary pressures re-emerging or proving more stubborn in some economies due to these new supply-side shocks and heightened uncertainty.

1.2. GDP growth

Global growth projections for 2025 now indicate a slowdown due to new trade policy shifts. Inflation forecasts suggest a continued, but slightly slower, decline, with some upward revisions. Fuel prices are estimated to decrease significantly amid commodity price fluctuations. Monetary policy in major economies is expected to ease, while fiscal policies in advanced economies generally tighten. These evolving dynamics will critically shape the global economic landscape.

Figure 1: Overview of the World Economic Outlook projections, 2020 – 2026 (real GDP, annual percent change)

	2020[1]	2021[2]	2022[3]	2023[4]	2024[5]	2025[5]*	2026[5]*
World Output	-3.1	6.0	3.5	3.3	3.3	2.8	3.0
Advanced Economies	-4.5	5.2	2.6	1.7	1.8	1.4	1.5
United States	-3.4	5.7	2.1	2.9	2.8	1.8	1.7
Euro Area	-6.3	5.2	3.3	0.4	0.9	0.8	1.2

Germany	-4.6	2.6	1.8	-0.3	-0.2	0.0	0.9
France	-8.0	6.8	2.5	1.1	1.1	0.6	1.0
Italy	-8.9	6.7	3.7	0.7	0.7	0.4	0.8
Spain	-10.8	5.1	5.8	2.7	3.2	2.5	1.8
Japan	**-4.6**	**1.7**	**1.0**	**1.7**	**0.1**	**0.6**	**0.6**
United Kingdom	**-9.8**	**7.4**	**4.1**	**0.3**	**1.1**	**1.1**	**1.4**
Canada	**-5.3**	**4.5**	**3.4**	**1.2**	**1.5**	**1.4**	**1.6**
Other Advanced Economies[a]	**-1.9**	**5.3**	**2.6**	**1.8**	**2.2**	**1.8**	**2.0**
Emerging Market and Developing Economies	**-2.1**	**6.6**	**4.1**	**4.4**	**4.3**	**3.7**	**3.9**
Emerging and Developing Asia	**-0.8**	**7.2**	**4.5**	**5.7**	**5.3**	**4.5**	**4.6**
China	2.3	8.1	3.0	5.2	5.0	4.0	4.0
India[b]	-7.3	8.7	7.0	8.2	6.5	6.2	6.3
Emerging and Developing Europe	**-2.0**	**6.8**	**0.8**	**3.3**	**3.4**	**2.1**	**2.1**
Russia	-3.0	4.7	-2.1	3.6	4.1	1.5	0.9
Latin America and the Caribbean	**-7.0**	**6.9**	**4.1**	**2.2**	**2.4**	**2.0**	**2.4**
Brazil	-4.1	4.6	2.9	2.9	3.4	2.0	2.0
Mexico	-8.3	4.8	3.9	3.2	1.5	-0.3	1.4
Middle East and Central Asia	**-2.8**	**4.5**	**5.6**	**2.1**	**2.4**	**3.0**	**3.5**
Saudi Arabia	-4.1	3.2	8.7	-0.8	1.3	3.0	3.7
Sub Saharan Africa	**-1.7**	**4.7**	**4.0**	**3.6**	**4.0**	**3.8**	**4.2**
Nigeria	-1.8	3.6	3.3	2.9	3.4	3.0	2.7
South Africa	-6.4	4.9	1.9	0.7	0.6	1.0	1.3
Memorandum							
World Growth Based on Market Exchange Rates	**-3.5**	**5.8**	**3.0**	**2.8**	**2.8**	**2.3**	**2.4**
European Union	**-5.9**	**5.4**	**3.6**	**0.6**	**1.0**	**1.0**	**1.4**

ASEAN-5[c]	**-3.4**	**3.4**	**5.5**	**4.0**	**4.6**	**4.0**	**3.9**
Middle East and North Africa	**-3.2**	**4.1**	**5.6**	**1.9**	**1.6**	**2.7**	**3.5**
Emerging Market and Middle Income Economies[d]	**-2.3**	**6.8**	**4.0**	**4.4**	**4.2**	**3.5**	**3.6**
Low-Income Developing Countries	**0.1**	**4.1**	**5.2**	**4.0**	**3.9**	**4.2**	**5.3**

*Projected

a. Excludes the Group of Seven (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries

b. For India, data and forecasts are presented on a fiscal year basis, and GDP from 2011 onward is based on GDP at market prices with fiscal year 2011/12 as a base year

c. Indonesia, Malaysia, the Philippines, Singapore, and Thailand

d. Vietnam is removed from the Low-Income Developing Countries group and added to the Emerging Market and Middle-Income Economies group. The reported differences from January 2024 and October 2023 are for Low-Income Developing Countries excluding Vietnam and Emerging Market and Middle-Income Economies including Vietnam

Source: World Economic Outlook Update, IMF, [1]October 2021, [2]October 2022, [3]October 2023, [4]October 2024, [5]April 2025

The global growth rate, estimated at 3.3% in 2024, is now projected to fall to 2.8% in 2025 before recovering modestly to 3.0% in 2026. This outlook represents a significant downward revision from the January 2025 Update, with growth for 2025 lowered by 0.5 percentage points. These figures are considerably below the historical (2000–19) average of 3.7%, largely due to the implementation of new trade measures, heightened policy uncertainty, and deteriorating global sentiment.

Advanced economies: Growth in advanced economies is projected to slow from an estimated 1.8% in 2024 to 1.4% in 2025 and then edge up to 1.5% in 2026. The 2025 forecast for advanced economies has been revised down by 0.5 percentage points since the January update, reflecting broad-based weaknesses.

The US economy is expected to see growth decrease to 1.8% in 2025, a 0.9 percentage point downward revision from January, because of greater policy uncertainty, trade tensions, and a softer demand outlook. Tariffs are also anticipated to weigh on growth in 2026, which is projected at 1.7%.

The euro area's economy is expected to see growth decline slightly to 0.8% in 2025, before picking up to 1.2% in 2026. Rising uncertainty and tariffs are key drivers of the subdued growth in 2025. The modest pickup in 2026 is supported by stronger consumption from rising real wages and a projected fiscal easing in Germany. Within the region, Germany's growth is forecast at 0.0% in 2025, while Spain's momentum remains stronger.

[1] World Economic Outlook, International Monetary Fund, October 2021
World Economic Outlook, October 2021: Recovery During A Pandemic
[2] World Economic Outlook, International Monetary Fund, October 2022
World Economic Outlook, October 2022: Countering the Cost-of-Living Crisis
[3] World Economic Outlook, International Monetary Fund, October 2023
World Economic Outlook, October 2023: Navigating Global Divergences
[4] World Economic Outlook, International Monetary Fund, October 2024
World Economic Outlook, October 2024: Policy Pivot, Rising Threats
[5] World Economic Outlook, International Monetary Fund, April 2025
World Economic Outlook, April 2025: A Critical Juncture amid Policy Shifts

The UK is projected to grow by 1.1% in 2025, a downward revision reflecting a smaller carryover from 2024, the impact of recent tariff announcements, an increase in gilt yields, and weaker private consumption amid higher inflation.

Japan's growth projection for 2025 is 0.6%, a downgrade due to the effects of newly announced tariffs and associated uncertainty offsetting an expected strengthening of private consumption.

Emerging and developing economies: Growth in the emerging markets and developing economies is projected to drop to 3.7% in 2025 and 3.9% in 2026, following an estimated 4.3% in 2024. This is a downward revision of 0.5 percentage points for 2025 from the January update.

Emerging and developing Asia is expected to see growth decline to 4.5% in 2025 and 4.6% in 2026, with ASEAN countries particularly affected by recent tariffs. China's GDP growth for 2025 is revised downward to 4.0%, reflecting the impact of recently implemented tariffs, which offsets stronger carryover from 2024 and fiscal expansion; growth is also projected at 4.0% in 2026 due to prolonged trade policy uncertainty. India's growth outlook is relatively more stable at 6.2% in 2025, supported by private consumption, but this is slightly lower than previous forecasts due to higher trade tensions and global uncertainty.

In **Latin America and the Caribbean**, growth is projected to moderate to 2.0% in 2025 before rebounding to 2.4% in 2026. The forecasts are revised downward, largely owing to a significant downgrade for Mexico, reflecting weaker-than-expected activity, the impact of US tariffs, associated uncertainty, and tighter financing conditions. Brazil's growth is projected at 2.0% in 2025.

The **Middle East and Central Asia** region is projected to see growth accelerate from 2.4% in 2024 to 3.0% in 2025 and 3.5% in 2026. However, this projection is revised downward from January, reflecting a more gradual resumption of oil production, persistent spillovers from conflicts, and slower-than-expected progress on structural reforms.

Sub-Saharan Africa is expected to see growth decline slightly from 4.0% in 2024 to 3.8% in 2025, recovering modestly to 4.2% in 2026. Growth forecasts for Nigeria are revised downward owing to lower oil prices, and for South Africa due to slowing momentum, deteriorating sentiment from heightened uncertainty, and the intensification of protectionist policies.

1.3. GDP, GDP per capita, and inflation

USA is the largest economy in the world followed by China. The other top 10 economies by 2023 were Germany, Japan, India, United Kingdom, France, Brazil, Italy and Canada. Among all major advanced economies, Japan's economy has contracted from 2010 to 2023 due to the ageing population. However, much like all other advanced and emerging economies as mentioned below, Japan is also likely to experience economic expansion from 2023 till 2026.

The real difference between advanced and emerging economies becomes evident when it comes to GDP per capita. The advanced countries have GDP per capita in the range of 33,000 to over 80,000 for the year 2024. In contrast, the GDP per capita for emerging countries is in between less than 2,000 to close to 30,000. Saudi Arabia has the highest GDP per capita among all the aforementioned emerging countries and comparable with some of the developed countries like Spain and Japan. Nevertheless, the emerging countries are coming up with government initiatives to uplift the population from poverty.

Figure 2: GDP, GDP per capita, and inflation of advanced and emerging Economies, 1980-2027 (at current prices)

Countries	GDP 1980 ($ Bn.)	GDP 1990 ($ Bn.)	GDP 2000 ($ Bn.)	GDP 2010 ($ Bn.)	GDP 2024 ($ Bn.)[6]	GDP 2027~ ($ Bn.)	GDP Per Capita^ (in $ '000)	Inflation ^^, 2025, (% change)
Advanced Economies								
United States of America	2,857.3	5,963.1	10,251.0	15,049.0	29,184.9	32,941.7	89.1	3.0
Germany	853.7	1,598.6	1,948.8	3,402.4	4,658.5	5,083.2	55.9	2.1
France	702.2	1,272.4	1,366.2	2,647.3	3,162.0	3,418.3	46.8	1.3
Italy	479.1	1,162.3	1,147.2	2,137.8	2,372.0	2,566.4	41.1	1.7
Spain	230.8	535.7	598.6	1,423.3	1,722.2	1,961.6	36.2	2.2
Japan	1,129.4	3,185.9	4,968.4	5,759.1	4,026.2	4,520.5	33.9	2.4
United Kingdom	607.7	1,197.0	1,668.7	2,487.9	3,644.6	4,239.5	54.9	3.1
Canada	276.1	596.1	744.6	1,617.3	2,241.2	2,435.5	53.5	2.0
Emerging Economies								
China	303.0	396.6	1,205.5	6,033.8	18,748.0	21,706.8	13.7	0.0
India	186.2	321.0	468.4	1,675.6	3,909.1	5,069.4	2.9	4.2
Russia	NA	NA	278.3	1,633.1	2,161.1	2,153.2	14.3	9.3
Brazil	145.8	455.3	655.5	2,208.7	2,125.9	2,297.3	10.0	5.3
Mexico	242.2	307.6	742.1	1,105.4	1,692.6	1,863.8	12.7	3.5
Saudi Arabia	164.5	117.5	189.5	528.2	1,085.3	1,180.9	30.1	2.0
Nigeria	NA	62.2	67.8	369.1	187.6	211.8	0.82	26.5
South Africa	89.4	126.0	151.9	417.3	400.2	439.3	6.4	3.8

~Projected
^Estimated based on 2024 data
^^Inflation, average consumer prices, projected for 2025

1.4. Population and age

In 2022, India became the most populous country in the world surpassing China. The United States of America is the 3rd in the list followed by Indonesia and Pakistan. One of the challenges that worry the advanced countries is the median age of the population. In the list given below, the median age of some of the advanced economies is more than 40 years (except for the United States of America). Conversely, the median age of most of the emerging countries is less than 40 years (apart from Russia)

[6] World Economic Outlook, International Monetary Fund, April 2025
World Economic Outlook, April 2025: A Critical Juncture amid Policy Shifts

and could be even lower than 20 years (eg. Nigeria). A young population is considered a boon to a country as it is considered productive, employable, and seen as a sign for innovation and entrepreneurship.

Figure 3: Population and median age of advanced and emerging economies, 1980-2027

Countries	Population (in Mn.) 1980	1990	2000	2010	2025*	2027[7]*	Median Age (2024) (Yrs.)
Advanced Economies							
United States of America	227.6	250.0	282.3	309.7	342.3	346.4	38.3
Germany	76.8	78.9	81.5	80.3	84.8	85.0	46.8
France	53.7	56.6	58.9	62.8	68.6	69.0	42.1
Italy	56.4	56.7	56.9	59.7	58.9	58.8	47.8
Spain	37.7	39.1	40.6	46.6	49.7	50.8	45.4
Japan	116.8	123.4	126.8	127.6	123.3	122.0	49.4
United Kingdom	56.3	57.2	58.9	62.8	69.8	70.8	40.0
Canada	24.5	27.6	30.6	34.0	41.5	41.6	40.5
Emerging Economies							
China	987.1	1143.3	1267.4	1340.9	1411.4	1400.0	39.6
India	696.8	870.5	1059.6	1240.6	1458.6	1480.0	28.4
Russia	NA	148.0	146.6	142.8	145.6	144.7	40.0
Brazil	121.2	146.5	169.6	190.8	213.4	214.7	34.4
Mexico	68.1	84.5	99.4	114.8	133.4	135.4	29.3
Saudi Arabia	8.4	13.7	18.1	24.0	36.0	37.5	29.6
Nigeria	73.4	95.2	122.3	158.5	233.3	244.9	19.3
South Africa	29.1	36.8	44.9	51.3	64.1	66.1	28.5

*Projected

Source: IMF, April 2024, April 2025

[7] World Economic Outlook, International Monetary Fund, April 2025
World Economic Outlook, April 2025: A Critical Juncture amid Policy Shifts

2. India Economic Trends

2.1. Economic overview

The World Bank's April 2025 Macro Poverty Outlook estimates India's economic growth to have slowed to 6.5% in FY25 (2024-25). This was characterized by steady services growth and accelerated agricultural activity, though industrial growth slowed, and on the demand side, growth was held back by lackluster investment. However, the outlook for FY26 projects growth at 6.3%, reflecting expectations that private consumption will benefit from easing inflation, recent income tax cuts, and good agricultural prospects, although overall investment growth is likely to be constrained by heightened global uncertainty and its negative impact. The government plans to continue fiscal consolidation, with the overall fiscal deficit projected to decline gradually, helping the public debt-to-GDP ratio to fall below 80% by FY28. Strong tax revenue growth and a decline in current expenditure as a share of GDP contributed to fiscal narrowing in FY25, with capital spending expected to stabilize as a share of GDP.

2.2. Economic metrics

Between 2000 and 2023, India's economy expanded nearly fourfold in real terms, driven by capital deepening, total factor productivity growth, improvements in the business environment, and greater participation in global trade. By FY25, real GDP was around 5% below its pre-pandemic trend level. As India looks ahead, it navigates a complex global environment with an outlook subject to significant downside risks from potential global policy shifts and elevated trade tensions.

Figure 4: Economic metrics, India, April 2025[8]

Expected GDP Growth Annual percent change 2025 **6.5**	GDP, Current Prices Billions of $ 2025 **4,187.01**	GDP Per Capita, Current Prices $ 2025 **2.87 thousand**
Inflation Rate, Average Consumer Prices Percentage Change 2025 **4.2**	Population Millions of people 2025 **1,450**	General Government Gross Debt Percent of GDP 2025 **80.4**

The global economy is uncertain due to geopolitical tensions and slow growth, but India's economy is strong with its vast domestic market and varied structure. To achieve and sustain higher growth, continued focus on efficient public investments, addressing barriers to female labor force participation, transitioning to greener energy sources, and further regulatory improvements are crucial. The growth rate for FY25 (2024-25) is estimated at 6.5%. This growth was supported by steady services and a rebound in agriculture, though industrial expansion decelerated. On the demand side, private consumption growth accelerated, while investment growth was lackluster. While public infrastructure spending has been a focus, overall investment growth decelerated in FY25 and is expected to be constrained in FY26 by uncertainty. To ensure continued progress in poverty reduction

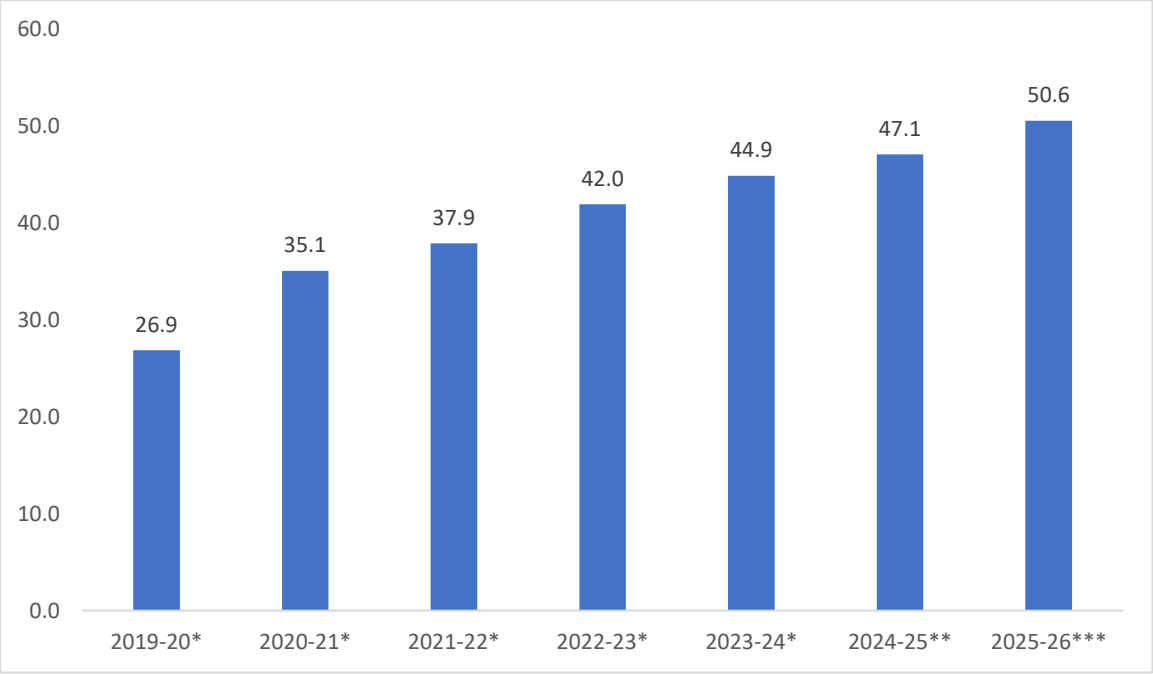
[8] World Economic Outlook, International Monetary Fund, April 2025
World Economic Outlook, April 2025: A Critical Juncture amid Policy Shifts

and support consumer spending, addressing agricultural sector challenges, managing food price volatility, and enhancing the effectiveness of social welfare schemes remain vital.

2.3. Government expenditure

Being a developing country, much of India's development depends on government expenditure. The Indian government's expenditure has increased over the years at a CAGR of approximately 11.2% from 2019-20 to 2025-26 (Budget Estimates). In other words, the budgeted estimates for 2025-26 have increased by approximately 1.9 times the actuals in 2019-20. Out of the 2024-25 revised expenditure estimates of INR 47.16 Lakh Crore (Cr.), INR 15.1 Lakh Cr. is spent on Central Sector Schemes/Projects, INR 14.4 Lakh Cr. on Other Central Sector Expenditure, INR 8.4 Lakh Cr. on Establishment Expenditure of the Centre, INR 4.2 Lakh Cr. on Centrally Sponsored Schemes, INR 3.7 Lakh Cr. on Other Grants/Loans/Transfers, and INR 1.3 Lakh Cr. on Finance Commission Grants. The trend in Effective Capital Expenditure is also on the rise from INR 5.2 Lakh Cr. in 2019-20 to a budgeted expense of INR 15.5 Lakh Cr. in 2025-26.

Figure 5: Expenditure of Government of India, FY 2020 – FY 2025, in INR. Lakh Cr.



*Actuals, **Revised Estimates, ***Budgeted Estimates
Source: Expenditure of the Government of India (as accessed on 16 June, 2025)[9]

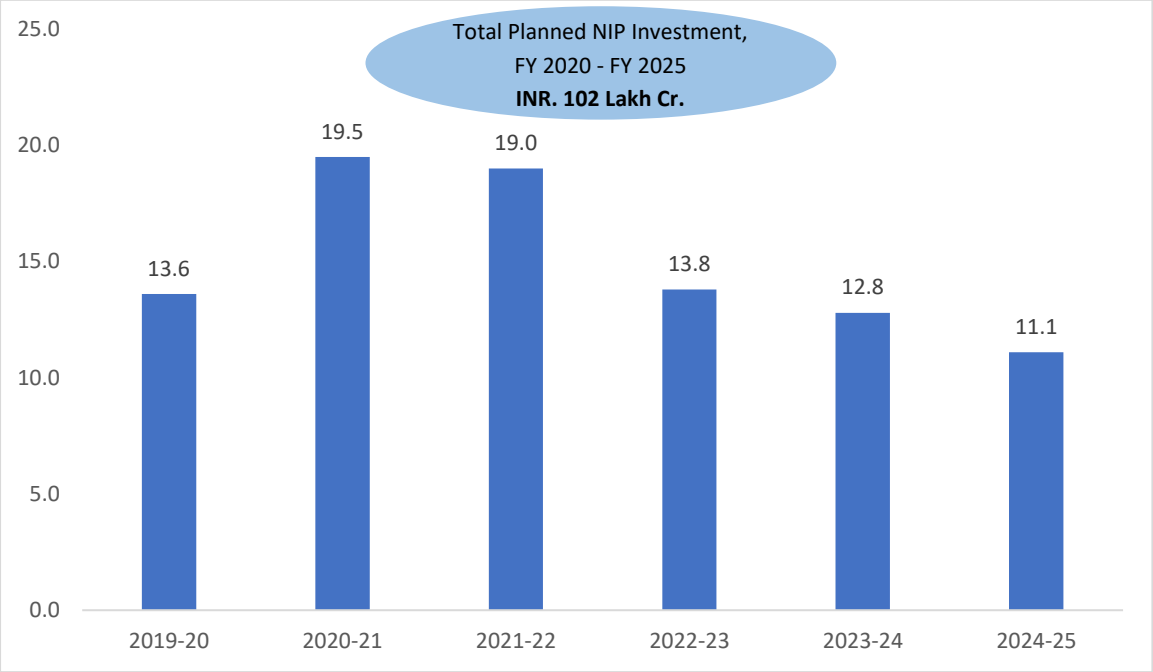
2.4. Infrastructure investments

Recognizing the critical need to bolster India's infrastructure, a significant impetus was provided in 2019 with a vision to invest substantially in the sector over the subsequent five years. The emphasis was, and continues to be, on improving ease of living through access to essentials like safe drinking water, clean and affordable energy, universal healthcare, and the development of modern transport networks including railway stations, airports, bus terminals, alongside world-class educational institutions. This sustained focus on infrastructure is paramount as India aims to reach a $7 trillion economy by 2030. Historically, between FY 2008 and FY 2019, sectors like power, roads & bridges,

[9] Expenditure of the Government of India, Ministry of Finance, Government of India
budget_at_a_glance.pdf

urban development, and telecommunications attracted the bulk of the approximate INR 80 Lakh Cr. in infrastructure investments. While the targeted investment period of around INR 102 Lakh Cr. from FY 2020 to FY 2025 (focused on energy, roads, urban, and railways) is now substantially complete, the government's commitment remains strong. This is evidenced by the continued high allocation towards capital expenditure, with the Budget for 2025-26 earmarking approximately INR 15.5 Lakh Crore for Effective Capital Expenditure, signaling a persistent drive to lay the groundwork for future growth despite potential headwinds from global uncertainty affecting overall private investments.

Figure 6: Planned National Infrastructure Pipeline (NIP) investments in India[10], FY 2020 – FY 2025, in INR. Lakh Cr.



No Phasing NIP Investment: INR. 12.2 Cr.
Source: National Infrastructure Pipeline, Ministry of Finance, Government of India

[10] National Infrastructure Pipeline, Ministry of Finance, Government of India, 2019, https://static.pib.gov.in/WriteReadData/userfiles/DEA%20IPF%20NIP%20Report%20Vol%201.pdf

3. Global Video Surveillance and Security Market

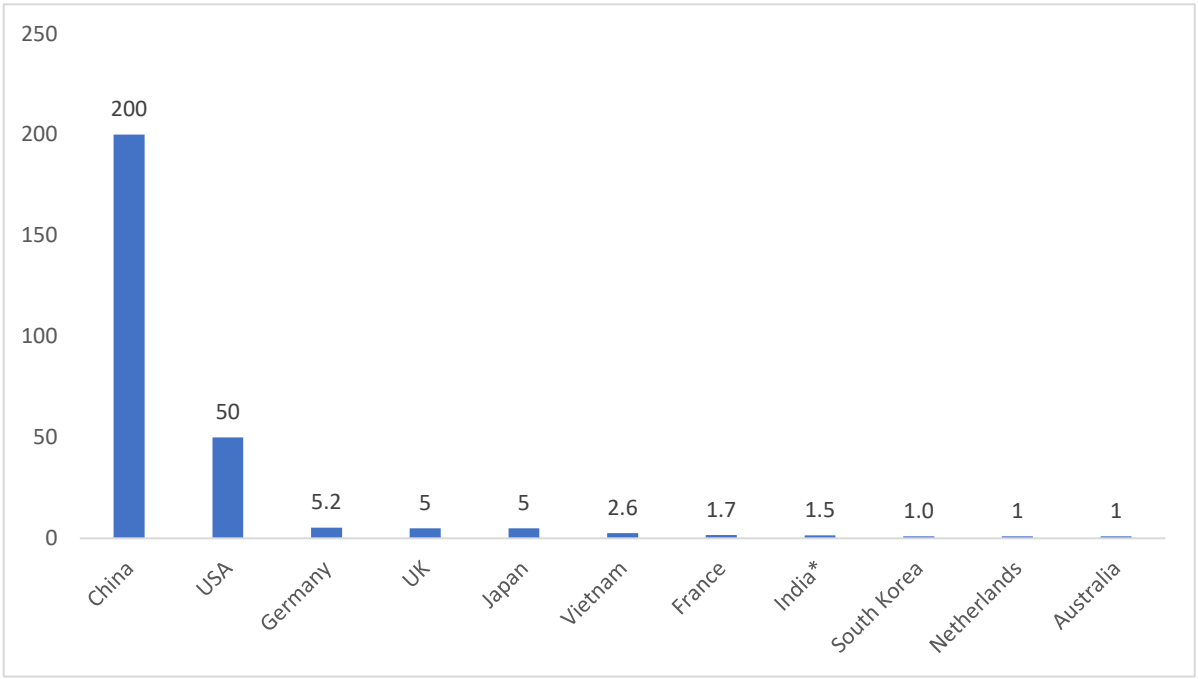
3.1. Market introduction

The global video surveillance and security market has experienced a significant transformation, marked by the adoption of advanced technologies (like artificial intelligence), integration with complementary security systems, and a shift towards service-based models. The developments have led to more intelligent, efficient, and comprehensive surveillance solutions catering to the evolving security needs of diverse end-users, driving robust growth and innovation in the industry.

Global CCTV adoption

Video surveillance has been in use for over two and half decades now. While some countries like China have been the largest users of video surveillance/CCTV systems, the United Kingdom (UK) was among the first countries to have widely adopted CCTV surveillance. It is estimated that around 5,238 cameras were already in use in the UK across 167 different schemes by 1997. Initially, the European countries were resistant to the acceptance of CCTV cameras due to privacy concerns, however, following terror attacks like 9/11 and the Madrid and London bombings, many nations in the region slowly started to install CCTV cameras. Based on research by Precise Security and Comparitech in 2019, China had the highest number of CCTV cameras installed followed by USA, Germany and the UK.

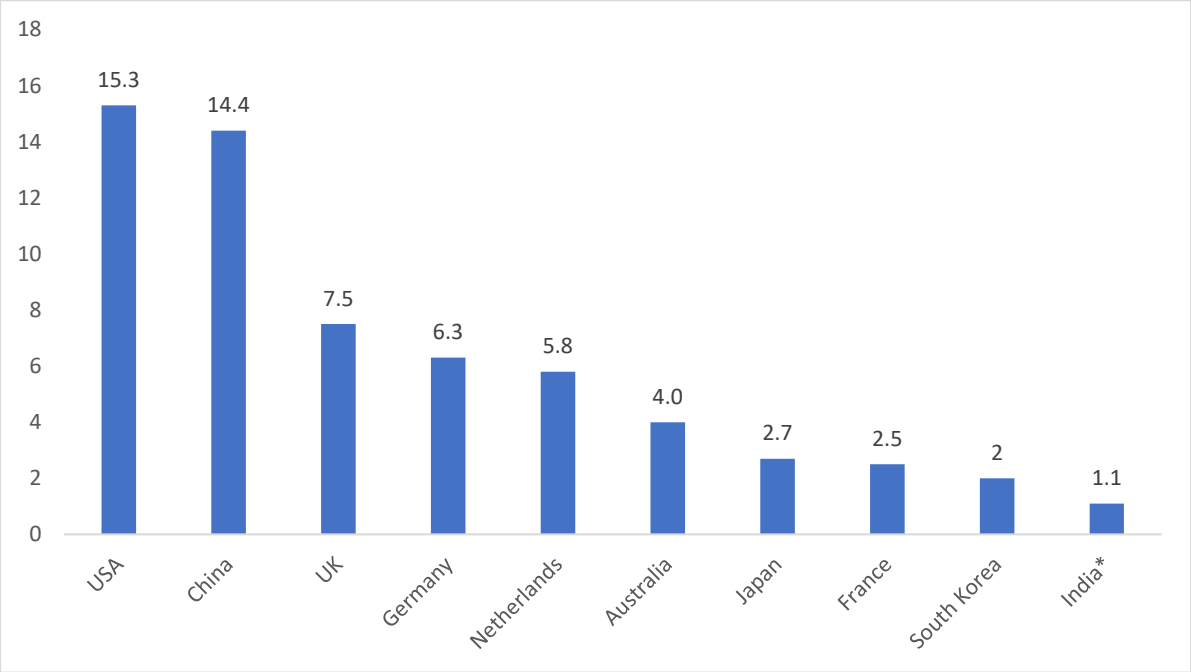
Figure 7: Countries by number of CCTV cameras installed, in millions, 2019



*This is the number of CCTV cameras installed across 15 cities in India
Source: Precise Security and Comparitech

As per the same report, In terms of number of CCTV Cameras per 100 individuals, the USA toped the chart. China was a close second and UK a distant third in the list.

Figure 8: Number of CCTV cameras per 100 individuals, 2019



*Based on the number of cameras in 15 cities with a combined population of 135.8 million.
Source: Precise Security and Comparitech

In 2025, Comparitech updated the numbers and based on the latest research data - excluding China - Hyderabad (India), Indore (India), Bengaluru (India), Lahore (Pakistan), Seoul (South Korea), Moscow (Russia), Kabul (Afganistan), Singapore, Saint Petersburg (Russia), and Baghdad (Iraq)are the top 10 most surveilled cities in the world when it comes to number of CCTV cameras per 1,000 people as given in the list below.

Figure 9: Top 10 most surveilled cities in the world – in terms of # of CCTV cameras per 1,000 people (excluding China), 2025

City	Country	Population (2025)	**# of CCTV Cameras**	# of Cameras per 1,000 people
Hyderabad	India	1,13,37,900	9,00,000	79.38
Indore	India	34,82,830	2,51,500	72.21
Bengaluru	India	1,43,95,400	5,85,284	40.66
Lahore	Pakistan	1,48,25,800	4,10,297	27.67
Seoul	South Korea	1,00,25,800	2,43,426	24.28
Moscow	Russia	1,27,37,400	2,50,000	19.63
Kabul	Afghanistan	48,77,020	90,000	18.45
Singapore	Singapore	6157270	112999	18.35

Saint Petersburg	Russia	55,97,340	1,02,000	18.22
Baghdad	Iraq	81,41,120	1,20,000	14.74

Source: Precise Security and Comparitech

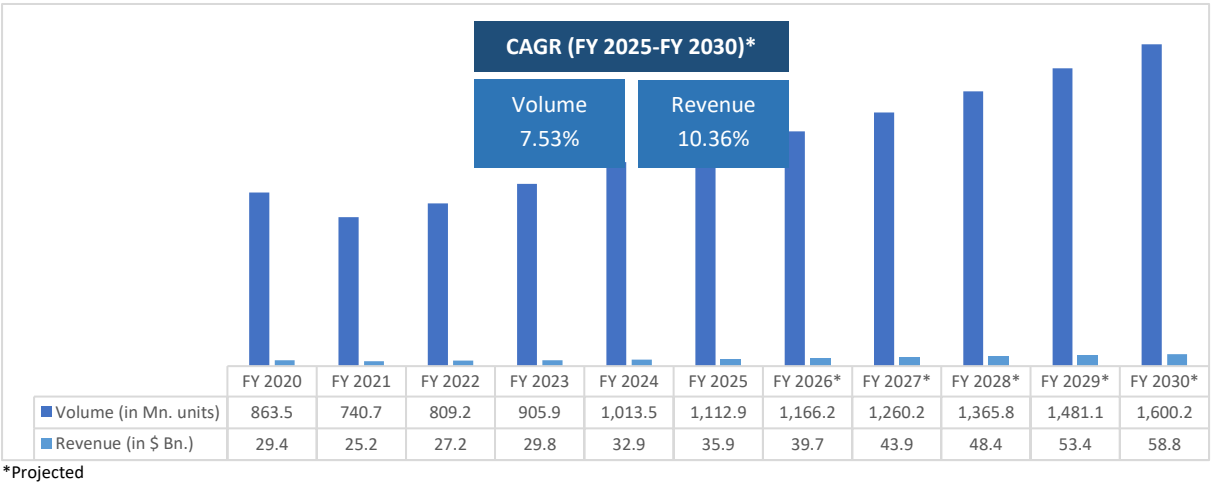
3.2. Market size and forecast by revenue and volume

Video surveillance is a fast-growing market driven by the need for improved safety and security. The industry has seen rapid advancements in the last two decades and the modern video surveillance setup is AI driven with capabilities like video analytics, face recognition, motion detection, high resolution video, remote access and monitoring, and flexibility and integration. While some of the countries and industry verticals have mandates and regulations for the use of CCTV cameras, others install cameras for better protection and operational use cases. No matter what, video surveillance is now considered as a basic infrastructure element with wide adoption across most industry verticals.

Global

Frost & Sullivan estimates the global video surveillance market to be valued at $35.9 billion in FY 2025. The market (in terms of revenue) is estimated to grow by compound annual growth rate (CAGR) of 10.36% from FY 2025 till FY 2030. Correspondingly, video surveillance volume is also expected to grow from 1,112.9 million units in FY 2025 to 1,600.1 million units in the next five years. In this research study, video surveillance definition includes CCTV cameras (analog and IP), recorders (NVR and DVR), encoders, and software. The market size does not include video storage, video analytics, and VMS – that is offered by a third party either through a partnership with the camera vendor or procured separately by the customer. The revenue numbers also do not include emerging models of video surveillance like cloud video surveillance/VSaaS, and managed video surveillance service (MVSS). The market size numbers are based on revenues clocked in by only the camera vendors. Also please note, market size of a country refers to billing or revenue recognized in that country. Any revenue that is not accrued by the vendor in the country despite the project/work being executed in the land, is not considered while estimating the total market size of that country. A mix of top-down and bottoms-up approach has been used to evaluate and validate the revenue estimates.

Figure 10: Video surveillance market size (in $ Bn.) and volume (in Mn. units), global, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	863.5	740.7	809.2	905.9	1,013.5	1,112.9	1,166.2	1,260.2	1,365.8	1,481.1	1,600.2
Revenue (in $ Bn.)	29.4	25.2	27.2	29.8	32.9	35.9	39.7	43.9	48.4	53.4	58.8

*Projected

Source: Frost & Sullivan

USA

There is high adoption of video surveillance systems in USA as the government and enterprises focus on enhanced security, and crime prevention. CCTV cameras placed across freeways, roads and streets help stop potential crimes as the mere presence of surveillance cameras acts as a strong deterrent making it less likely for individuals to engage in activities like theft, vandalism, or break-ins. CCTV cameras enable real-time monitoring thereby helping users to view live footage from any location. For post crime scenarios, CCTV gathered video data is used as evidence by law enforcement agencies and remains submissible in the court. Frost & Sullivan estimates the USA video surveillance market to be sized at $8.8 Bn. in FY 2025 and likely to touch $13.3 Bn. by the end of FY 2030. Revenue growth is projected at 8.66% during the five-year period. In terms of volume, the number is expected to grow from 271.7 Mn. units in FY 2025 to 361.6 Mn. units in FY 2030.

Figure 11: Video surveillance market Size (in $ Bn.) and volume (in Mn. units), select countries and regions, FY 2020-FY 2030

	USA		Europe		China		India		Rest of APAC	
	Rev.	Vol.	Rev.	Vol.	Rev.	Vol.	Rev.	Vol.	Rev.	Vol.
FY 2020	7.4	217.5	7.0	204.1	5.9	173.6	1.0	28.9	2.5	73.0
FY 2021	6.3	186.6	6.0	176.0	5.1	150.9	0.9	25.1	2.0	59.4
FY 2022	6.8	202.5	6.5	193.3	5.5	163.1	0.9	27.8	2.3	67.3
FY 2023	7.4	224.9	7.2	217.6	6.0	183.5	1.0	31.5	2.5	75.0
FY 2024	8.1	249.5	7.9	244.8	6.7	206.6	1.2	35.9	2.7	83.7
FY 2025	8.8	271.7	8.7	270.3	7.4	228.3	1.3	39.7	3.0	92.1
FY 2026*	9.5	279.2	9.6	281.4	8.1	237.7	1.5	45.2	3.6	105.0
FY 2027*	10.4	297.3	10.6	304.1	8.9	255.9	1.8	51.3	4.1	118.6
FY 2028*	11.3	317.5	11.7	329.8	9.8	276.7	2.1	58.3	4.7	133.7
FY 2029*	12.2	338.9	12.9	357.9	10.8	299.2	2.4	66.0	5.4	150.9
FY 2030*	13.3	361.6	14.2	387.8	11.9	323.0	2.7	74.6	6.1	166.2
CAGR (FY 2025 - FY 2030)* (in %)	8.66	5.88	10.31	7.49	10.00	7.19	16.46	13.5	15.49	12.53

*Projected

Source: Frost & Sullivan

Europe

Despite the lack of regulation or mandates in Europe in terms of use of video surveillance systems across industry verticals, the acceptance has been high. Almost all European Union (EU) institutions and bodies have video-surveillance in operation on their premises. However, a balance has been maintained between security and privacy when using video surveillance. The European Data Protection Supervisor (EDPS) has guidelines on processing of personal data through video surveillance systems, emphasizing the need for clear policies, data minimization, and timely deletion of footage. According to Frost & Sullivan, the European video surveillance market is estimated to become $14.2 Bn. by the end of FY 2030. Currently, the market stands at $8.7 Bn. In terms of volume units, the market is expected to grow close to 1.5x in the next 5 years.

China

China remains on the top for the most surveilled countries in the world. In-fact, the country is home to nine out of the top 10 most surveilled cities globally. Mass surveillance is conducted in China through a network of monitoring systems used by the Chinese central government to monitor its

citizen. Surveillance is controlled through the government, although enterprise/corporate surveillance in connection with the Chinese government is also reported. Mass surveillance in the country is expanded under the PRC Cybersecurity Law and with the help of local companies like Tencent, Dahua Technology, Hikvision, SenseTime, ByteDance, Megvii, Yitu Technology, Huawei, ZTE, and others. Secondary sources report, mainland China had installed over 700 million CCTV cameras by August 2023, one lens for every two citizens. The exponential rise in camera installations increased till the Covid-19 pandemic after which new installations saw a linear growth. Frost & Sullivan estimates, the Chinese video surveillance market to be sized at $7.4 Bn. in FY 2025 and estimated to grow at CAGR 10.0 % till FY 2030.

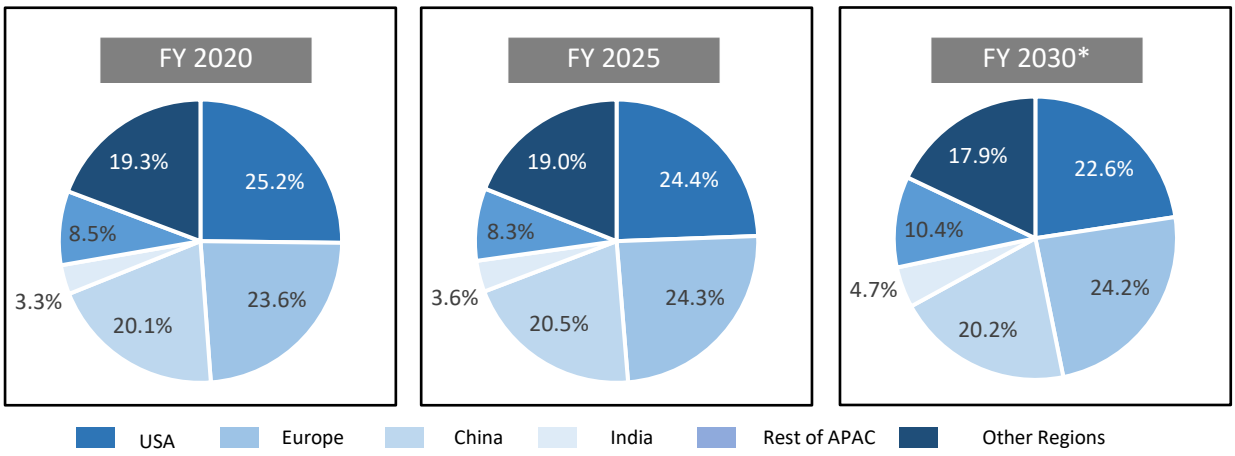
India

India is one of the fastest growing major economies in the world. There has been significant focus from the government on infrastructure with initiatives like Smart Cities, Digital India, PM Gati Shakti Scheme, Bharatmala Scheme, etc. Security and safety remain critical in any of these initiatives and hence the installation of video surveillance systems is important. The private sector, enterprises and businesses, deploy CCTV systems for not just surveillance but also for other use cases like people counting, energy management, automatic number plate recognition, etc. From close to $1.0 Bn. in FY 2020, the video surveillance market in India reached $1.3 Bn. in FY 2025 with growth until 2030 estimated at CAGR 16.46%.

Rest of APAC

APAC is the fastest growing region in the global video surveillance market. While China remains the biggest, and India is among the fastest growing within the geography, the ASEAN region is also expected to grow at a similar pace as that of the APAC average. Rest of APAC includes ASEAN countries, South Korea, Japan, and Australia among others. North Korea which has very limited information in the public domain, remains highly surveilled as digital technology in the country is progressively evolving and impacting society in many ways. Based on estimates, the video surveillance market in Rest of APAC currently stands at $3.0 Bn. in FY 2025 and likely to touch $6.1 Bn. by FY 2030.

Figure 12: Video surveillance market construct (in terms of revenue), select countries and regions, FY 2020 – FY 2030



*Projected
Source: Frost & Sullivan

3.3. Market trends

The video surveillance market has evolved significantly in the recent years, driven by advancements in technology, concepts, and feature sets. From analog to Internet Protocol (IP) camera, and on-premise to cloud-video surveillance, the industry has seen market defining transformation in the recent past. Listed below are some of the most important and impactful market trends in the global video surveillance industry:

- **Shift from analog to IP cameras:** The move from analog to IP cameras has elevated video quality, storage capacities, and remote accessibility. IP cameras have redefined the surveillance landscape, as they offer better clarity, versatility, and ease of use, indicating a significant shift in the industry. Some of the IP cameras come with motion detection, two-way audio, and advanced encryption protocols, while ensuring a higher level of security. In addition, the integration of IP cameras with network video recorders (NVRs) has streamlined video management, allowing efficient storage and retrieval of footage, marking a pivotal advancement in surveillance technology.
- **Demand for remote monitoring:** The surge in the requirement for remote monitoring capabilities highlights the increasing emphasis on proactive security measures and real-time insights. The demand has driven the development of sophisticated surveillance systems that allow seamless remote access and monitoring, enabling businesses and individuals to remain vigilant and responsive to security incidents regardless of their physical location.
- **The concept of Managed Video Surveillance Services (MVSS):** Managed Video Surveillance Service (MVSS) is a services model of surveillance which involves the management and monitoring of customer premise from a command center located at the service provider's premise. While the data is stored locally at the customer's place, the video monitoring, scrutiny and analysis is being done by the service provider from the command center. A few of the distinct features of MVSS includes remote monitoring with intrusion alarm solutions, ability to detect and mitigate attempted crime, use of IoT devices and sensors for better crime detection, ability to stop false positives, etc.
- **The emergence of cloud video surveillance:** Also known as Video Surveillance as a Service (VSaaS), the emergence of cloud-based video surveillance has brought forth advantages in terms of scalability, accessibility, and cost-efficiency. The shift towards cloud video surveillance solutions represents a strategic transition from traditional on-premises systems to cloud-based infrastructures. This transformation has been fueled by the need for centralized management, advanced data protection, and operational flexibility. It offers features such as remote/cloud video storage, automated software updates, and the ability to integrate with other security systems, thus enhancing overall operational efficiency. Cloud-based video surveillance has empowered organisations and individuals with seamless access to surveillance data, enabling simplified infrastructure management.
- **The rise of AI-driven video analytics:** The integration of AI-driven video analytics algorithms represents a technological breakthrough in the surveillance domain, enabling advanced processing, real-time analysis, and proactive threat detection. These algorithms leverage the power of AI to analyze vast amounts of video data with precision and efficiency, outperforming traditional surveillance systems. It simplifies and eases the burden of repetitive and tedious tasks of long-hour video observation by humans. It also helps perform video analysis, identify trends, categorize, and automatically tag specific objects, much

beyond just creating use-cases in security and surveillance and hence enable operational efficiency.

3.4. Market growth drivers

The global video surveillance market is expected to grow strong given the various use-cases it caters to. While video surveillance primarily helps in improving the security and safety posture, it is also used in enabling various other scenarios like counting people, identifying objects, number plate recognition, etc. Listed below are some of the growth drivers for the global video surveillance market:

- **Increased need for security:** The escalating concerns surrounding safety and protection in a variety of settings, including commercial establishments, residential areas, and public spaces, have catalyzed the quest for sophisticated surveillance solutions. With the prevalence of heightened security threats and the growing need for proactive monitoring and rapid threat identification, video surveillance has assumed a pivotal role in fortifying assets and ensuring the well-being of individuals. This heightened need for security has not only fostered the evolution of cutting-edge surveillance technologies but has also paved the way for the integration of recent advancements such as artificial intelligence (AI), facial recognition, and predictive analytics. These technologies have revolutionized surveillance capabilities, enabling intelligent threat detection, behaviour analysis, and real-time alerts, thus elevating the efficacy and responsiveness of security operations.
- **Good alternative to manned guarding:** Video surveillance is increasingly becoming a suitable alternative to manned guarding. It has several advantages over traditional physical manned guarding. While typical guarding suffers from lack of efficiency, cost effectiveness, and limited coverage, video surveillance has lower long-term cost compared to hiring security personnel, wider coverage, and can monitor large number of sites simultaneously. The presence of visible cameras can deter potential criminals from attempting theft or vandalism. Video surveillance offers 24x7 monitoring, day and night, and can detect any suspicious activity. CCTV footage collected during monitoring acts as proof of evidence and acceptable in the court of law.
- **Technological advancements in video surveillance:** Technological Advancements like cloud video surveillance or VSaaS introduces scalable and service-based models that revolutionize security operations and management. Organisations can optimize their surveillance systems to adapt to changing needs efficiently. Cloud video surveillance enhances this adaptation by providing remote accessibility, scalability, and cost-efficiency that surpass traditional on-premise setups. The integration of advanced video analytics, leveraging AI and machine learning, elevates surveillance capabilities by enabling precise data analysis and proactive threat detection. Likewise, the rise of dash cams, body cams, and GoPro cameras expands the applications of video surveillance even further, catering to various needs from personal use to law enforcement and adventure activities.
- **The rise of industry regulations:** The video surveillance industry has seen a significant increase in regulatory mandates. Several state governments in India (Delhi, Maharashtra, Karnataka, etc.) have already made it mandatory to install CCTV cameras in schools. Beyond just classrooms, state governments are also making it mandatory to install CCTV cameras in school buses (eg. Uttar Pradesh). Similarly, the Reserve Bank of India (RBI) in 2016 instructed all banks to have their transactions under CCTV surveillance. Later in 2018, the central bank even instructed cash vans transporting money should also have CCTV surveillance. From a public

safety standpoint, the Indian government through its Safe City Project focuses on installing CCTV cameras in urban areas.

- **Affordability of video surveillance products and solutions:** The affordability of video surveillance products and solutions has played an important role in driving widespread adoption across various sectors. With the decreasing costs of surveillance hardware and the availability scalable solutions, the implementation of tailored security systems has become more accessible to businesses, individuals, and organisations without imposing significant financial burdens. This enhanced affordability has not only broadened access to security solutions but has also spurred innovation, competition, and diversity within the video surveillance industry.
- **Growing use-cases of video surveillance:** Beyond offering security, video surveillance finds several use-cases across different industry verticals – specifically with the use of video analytics. Video analytics transforms the retail industry by providing valuable insights that enhance operations, improve customer experiences, and increase security. It helps retailers to track and analyze customer journeys within the store. It traces footfall, customer behaviour, dwell times, movement patterns, high demand store sections, etc., thereby helping retailers to optimize store layouts and product placements. It also enables retailers to streamline operations by assessing employee performance and productivity. Some of the advanced video surveillance systems also help provide energy efficiency as light, fan and air conditioning systems get switched off in the absence of any human being in the vicinity.

3.5. Industry challenges

Despite the strong growth momentum, the global video surveillance market faces some industry adoption challenges. The video surveillance industry is intensely competitive and is characterized by extensive R&D and rapid technological changes. There is concern around privacy and individual freedom on the use of surveillance technologies. While the market would continue to grow in double digits in the next five years, listed below are some of the industry challenges in the adoption of video surveillance:

- **Need for high-capacity storage for high-resolution images:** The video surveillance industry faces a significant challenge in meeting the escalating demand for high-capacity storage of high-resolution images and videos. The growing trend of higher resolution and 4K surveillance cameras has amplified the need for scalable and efficient storage systems capable of handling immense amounts of data without compromising performance. The emergence of AI and machine learning (ML) applications in video analytics necessitates robust storage capabilities to facilitate real-time processing and analysis of large video datasets. Tackling this challenge mandates the development of innovative storage solutions that offer higher capacity, scalability, and reliability to support the evolving demands of high-resolution video surveillance applications.
- **Privacy and security concerns on the use of video surveillance:** One of the significant concerns with video surveillance is the impact on individual privacy. The ease with which CCTV cameras can capture people's movements and activities raises worries about invading personal space and infringing on privacy rights. Continuous monitoring through video surveillance can make individuals feel like they are constantly under scrutiny, potentially leading to a loss of freedom and a sense of intrusion into their private lives. Measures such as

standard operating procedures, encryption of video data, and access control mechanism can help safeguard the confidentiality and integrity of surveillance footage, thereby protecting individual privacy rights.

- **Interoperability and integration challenges:** The integration of various video surveillance systems with different technologies presents a significant obstacle for professionals in the industry which hinders the creation of a unified and interconnected security ecosystem. The absence of standardized protocols and interfaces complicates the process of blending these systems, resulting in interoperability challenges across surveillance devices, access control systems, and emerging IoT applications.

3.6. CCTV guidelines in USA and Europe

With the high adoption of video surveillance and the way it helps improve security and safety, several industry bodies across the world have come up with industry guidelines. Following mentioned below are some of the video surveillance guidelines noticed across the USA and Europe:

United States of America (USA)

- **The American Public Transportation Association (APTA):** The American Public Transportation Association, known as APTA, has put forth a recommended practice called APTA IT-CCTV-RP-001-11 to guide the use of cameras and recording equipment in transit-related CCTV applications. These guidelines cover various aspects of CCTV systems like choosing the right cameras, digital recording devices, and high-speed digital trainlines. The aim of these guidelines is to assist transit-related environments, including rail cars, buses, depots, and stations, in implementing effective CCTV systems that enhance public safety and security. By providing these detailed guidelines, the APTA aims to support the transit industry in deploying CCTV systems that strike a balance between public safety needs and advancements in technology.
- **Federal Highway Administration (FHWA):** The Federal Highway Administration (FHWA) in the United States oversees rules governing the use of CCTV cameras on transportation networks. These rules aim to ensure the ethical considerations of security and privacy are upheld in the use of video surveillance for transportation management. Transportation agencies, such as the Niagara International Transportation Technology Coalition, implement practices like using wide-angle camera views to safeguard individuals' privacy. By focusing on capturing traffic and transportation conditions without identifying details, these practices demonstrate a commitment to prioritizing the security and privacy of individuals using the transportation system. The FHWA's guidelines on the use of CCTV systems for traffic monitoring emphasize the importance of respecting privacy rights while effectively managing transportation infrastructure. This ethical approach underscores a commitment to responsible and transparent use of video surveillance in transportation management, ensuring that public safety is prioritized while privacy concerns are respected.

Europe

- **General Data Protection Regulation (GDPR):** In Europe, the regulation of CCTV systems is primarily governed by GDPR. This is applicable for countries in the European Union (EU) and the European Economic Area (EEA). GDPR imposes strict requirements on organisations that use CCTV for monitoring and surveillance, particularly regarding the handling of personal data.

Some of the key regulations include: organisations to inform individuals that they are being monitored, minimize the amount of data collected and ensure that is relevant to the intended purpose, before installing or modifying a CCTV system organisations must conduct a DPIA to access potential privacy risks and ensure compliance with GDPR, video footage not to be stored beyond the retention period, and individuals to have the right to request access to their personal data captured.

3.7. Western economies moving away from China

Over the last few years, there has been a discernible trend of Western economies, particularly major multinational corporations, gradually diversifying their manufacturing operations away from China. This shift is a strategic response to various factors, including the US-China trade tensions, rising production costs in China, and a desire to mitigate risks associated with over-reliance on a single manufacturing hub. United States, the largest economy in the world, is seen to move some of their manufacturing away from China. There are concerns regarding intellectual property protection, the impact of US-China trade tensions, challenges posed by rising labour costs in China, as well as a broader desire to diversify their supply chains and reduce dependency on a single country. Additionally, the COVID-19 pandemic brought to light vulnerabilities stemming from a heavy reliance on Chinese manufacturing, further stimulating the urgency for multinationals to reconsider their production strategies.

The Apple case study

An exemplary case of a Western economy transitioning its manufacturing focus away from China is Apple’s strategic move towards India. Apple's decision to transfer a significant portion of its supply chain operations to India, with plans to create around 500,000 direct jobs within India's industrial ecosystem, underscores the company's strategic pivot towards diversification and expansion. Motivated by factors such as India's expanding manufacturing capacity, initiatives like the Production-Linked Incentive (PLI) scheme, a growing market with decreasing poverty rates, the necessity to comply with local sourcing requirements, access to cost-effective skilled labor, and the aim to mitigate supply chain risks, Apple's transition embodies a strategic response to the changing global landscape. The detailed analysis of Apple's transition unveils a multitude of implications and considerations. The move offers Apple advantages like reduced manufacturing costs, a diversified supply chain to enhance resilience against disruptions, access to a burgeoning consumer base, job creation, economic impact in India, alignment with environmental sustainability goals, and potential competitive gains. However, the transition also introduces risks such as supply chain disruptions, quality control challenges, and geopolitical uncertainties in the Indian context that require vigilant management.

The impact of Apple's shift extends beyond India, resonating globally. It triggers economic consequences in China, necessitates adjustments in the tech sector's supply chain, intensifies competition, amplifies geopolitical tensions, and may affect innovation dynamics. On a broader scale, Apple's move signifies a broader trend towards supply chain diversification, reshaping of global manufacturing systems, trade realignments, improved labor conditions, and enhanced environmental considerations.

4. India Video Surveillance and Security Market

4.1. Market introduction

The security and video surveillance market in India has witnessed a notable change, with the adoption of advanced technologies and the integration of diverse security systems. This shift has led to the development of smarter, more efficient surveillance solutions that meet the changing needs of various users. These changes have brought significant growth and innovation to the industry, showing a strong effort to keep up with India's evolving security needs.

CCTV adoption in India

India has experienced several security incidents in the past some of which includes the 2001 Indian Parliament attack, the 2008 Mumbai attacks, 2010 Pune bombing at a German bakery, 2016 Pathankot attack, 2016 Uri attack, and 2019 Pulwama attack. Given the security concerns that the country has experienced, the Indian government has prioritized increasing security measures, one of which is through CCTV surveillance. Video surveillance in urban areas have improved the security posture thereby reducing security threats to a certain extent. The Indian government has also been using CCTV across all its Smart Cities to enhance public safety, optimize urban management, and integrate with advanced technologies. In airports, cameras are being used in initiatives like Digi Yatra which uses facial recognition technology during airport check-ins. Enterprises and retailers also use CCTV for security as well as for enabling use-cases of video analytics.

Hyderabad, Indore, Bengaluru, Delhi, Chennai, and Pune are the most surveilled cities in India as per the 2025 Comparitech data. Hyderabad is estimated to have ~9,00,000 CCTV cameras in the city for a population of 1,13,37,900 in 2025. This translates to ~79.38 cameras per 1,000 people. Indore has an estimated 72.21 cameras per 1,000 people as compared to 40.66 for Bengaluru and 9.04 for Delhi. However, given the seriousness around security and the benefits that video surveillance offers, it is most likely that several of the Tier I and Tier II Indian cities would be covered under the purview of CCTV cameras.

Figure 13: Most surveilled cities in India – in terms of # of CCTV cameras per 1000 people, 2025

Country	City	Population	# of CCTV Cameras	# of cameras per 1,000 people
India	Hyderabad	1,13,37,900	9,00,000	79.38
India	Indore	3482830	251500	72.21
India	Bengaluru	1,43,95,400	5,85,284	40.66
India	Delhi	3,46,65,600	3,13,332	9.04
India	Chennai	1,23,36,000	1,06,576	8.64
India	Pune	75,25,720	52,065	6.92
India	Kochi	36,04,550	23,966	6.65
India	Lucknow	41,32,670	27,245	6.59

India	Mumbai	2,20,89,000	82,390	3.73
India	Ahmedabad	90,61,820	21,036	2.32

Source: Comparitech

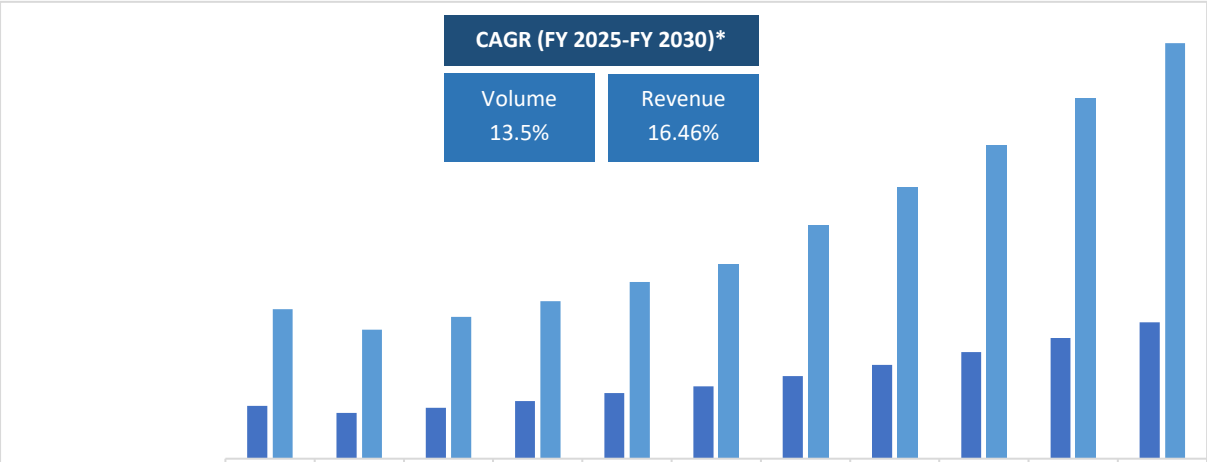
4.2. Market size and forecast by revenue and volume

India, as one of the prominent economies in South Asia, has experienced a significant rise in the adoption of video surveillance systems. With a growing emphasis on enhanced security, crime prevention, and response mechanisms, individuals, organisations, and authorities have started to leverage video surveillance as a key tool to ensure personal and public safety. Increasing incidents of terrorism and rising crime figures have created the need for advanced security measures, leading to an uptick in the deployment of surveillance technology across the country. In India's current security systems landscape, video surveillance has become indispensable. The market has witnessed a shift from traditional analog cameras to IP/network-based cameras, driven by technological advancements. Currently, most of the video installations are noticed in west, south and north India, however the eastern part of India, while still developing, presents high potential for growth in the video surveillance market.

Several key drivers fuel the growth of the CCTV camera market in India. Growing concerns about security and crime rates, increasing urbanization, the need for monitoring public spaces, and the growing number of use-cases for video analytics beyond security (eg. people counting, occupancy management, energy management, parking management, etc.) have been instrumental in prompting the recognition of the significance of CCTV cameras. Frost & Sullivan estimates that the video surveillance market in India is experiencing a surge, with a market value estimated at INR. 106.2 billion during FY 2025. This growth is expected to continue at a CAGR of 16.46% annually until FY 2030, with the market size estimated to reach INR. 227.4 billion by then. The number of video surveillance units sold is also positioned for significant growth, with an estimated volume of 39.7 million units in FY 2025 and expected to reach 74.6 million units by Fiscal 2030. This growth can be credited to various factors. An increasing emphasis on security for individuals and businesses, coupled with government endeavors such as the promotion of enhanced security infrastructure in smart city initiatives, are likely contributing to this trend. Advances in video surveillance technology, including high-definition cameras and analytics software, would make the systems more attractive.

Also, it is to be noted that the replacement of video surveillance systems is a high opportunity market. Based on Frost & Sullivan research, video surveillance was introduced in the India in the early 2000s. The first deployments were seen in urban areas, specifically Delhi and Mumbai. The market got momentum in India around 2005 after which the growth has been high. By late 2000s and early 2010s, various central and state government offices installed CCTV cameras before it became a mandate in several regulated industry verticals. Given that it’s already been around two decades for some of the early installed CCTV cameras, several of the video surveillance systems have already gone through replacement while some of them are due. The average lifespan of a CCTV camera is in the range of 5-10 years – depending on the type of camera and build. High-end cameras with better components and construction tend to have a longer lifespan. Regular maintenance of the cameras often extends the life of the camera. Infrared cameras have an average lifespan of 5-6 years due to LED attenuation. Summarily, with an existing installed base of video surveillance systems, the replacement market would also like to grow strong in addition to new deployments.

Figure 14: Video surveillance market Size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	28.9	25.1	27.8	31.5	35.9	39.7	45.2	51.3	58.3	66.0	74.6
Revenue (in INR. Bn.)	81.8	70.7	77.6	86.1	96.7	106.2	127.7	148.5	171.5	197.4	227.4

*Projected
Source: Frost & Sullivan

4.3. Market size and forecast by components - revenue and volume

4.3.1. Camera

The video surveillance camera market is estimated to rise, with substantial growth anticipated in both unit sales and revenue generation. The volume of units is expected to increase, starting from 23 million units in FY 2020 and reaching 61.0 million units in FY 2030. In terms of revenue, the market shows a very similar pattern, with revenues increasing from INR. 43.2 Bn. in FY 2020 to an estimated INR. 137.6 Bn. in FY 2030. The consistent increase in both volume and revenue demonstrates a strong demand and market potential for CCTV cameras in the country over the forecasted period. The growing need for safety and security, especially in urban areas, alongside the rising adoption of CCTV cameras for surveillance purposes, will be key drivers of this growth. The implementation of government initiatives to boost domestic manufacturing and exports in the electronics sector will further propel the demand for cameras. Moreover, the supportive regulatory environment, including schemes like the Production Linked Incentive Scheme, is expected to fuel the expansion of the India CCTV Camera Market, attracting both local production and foreign investments.

The impact of external factors such as the COVID-19 pandemic and the Russia-Ukraine war is also noteworthy. Despite the initial disruptions in the supply chain due to the pandemic, the increased focus on safety and security post-pandemic has led to a surge in demand for CCTV cameras. Businesses and individuals are emphasizing compliance with health protocols and remote surveillance, contributing to the growth of the market. The adaptation to cloud-based and AI-driven surveillance systems further demonstrates the resilience and adaptability of the India CCTV Camera Market in response to changing circumstances. In conclusion, the future of the camera segment in the video surveillance market in India looks promising, with a strong growth trajectory driven by government support for the electronics sector, and the adaptability of the market to external challenges. The market is well-positioned to leverage these factors for sustained growth and expansion in the coming years.

Figure 15: Camera market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	23.1	20.1	22.4	25.4	29.0	32.1	36.6	41.7	47.5	53.9	61.0
Revenue (in INR. Bn.)	43.2	38.2	42.0	46.6	53.3	59.1	73.8	87.4	101.7	118.5	137.6

*Projected
Source: Frost & Sullivan

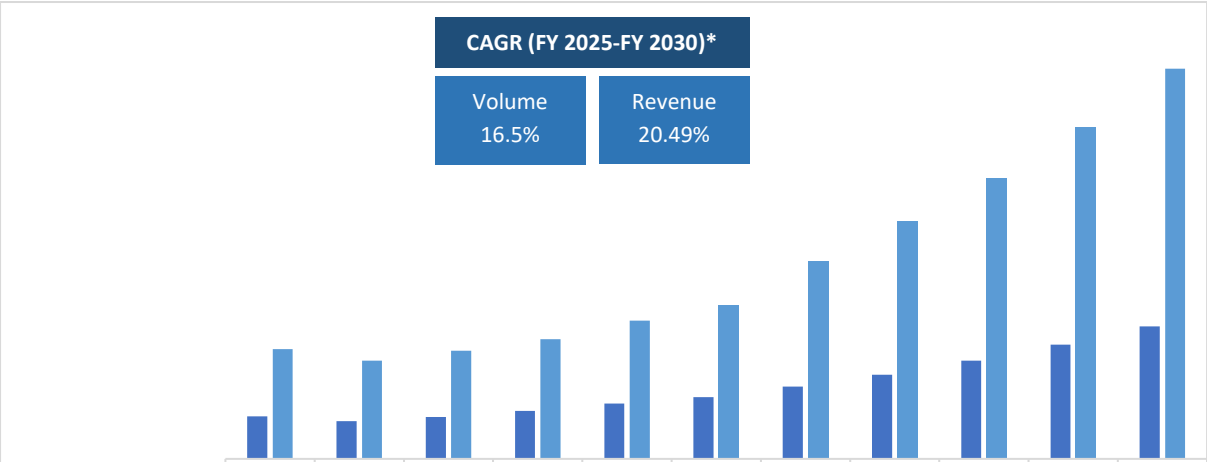
- IP camera

IP cameras have had a significant impact on the surveillance industry due to their advanced capabilities for remote monitoring, high-quality video output which sets it apart from traditional analog cameras. The IP camera market in India has experienced substantial growth over the years, with consistent increases in both volume and revenue. In FY 2025, the volume of IP cameras reached 18.9 million units, generating a revenue of INR. 47.1 Bn. This signifies the expanding market for IP cameras in India, fueled by the heightened awareness of the need for robust surveillance systems and the benefits offered by IP cameras. Looking forward, the forecasted volume and revenue figures for fiscal year 2025 to 2030 indicate a substantial increase, with a compound annual growth rate (CAGR) of 16.5% in volume and 20.49% in revenue. These projections suggest sustained demand for IP cameras in India, positioning the market on a strong growth trajectory.

There is a variety of IP camera types available in the market to cater to different needs. Bullet cameras, with their cylindrical design, are ideal for outdoor use or long-range monitoring. Dome cameras, known for their discreet and vandal-resistant build, are often used indoors. PTZ (Pan-Tilt-Zoom) cameras offer the benefit of remote control over movement and zoom for wider coverage. Finally, wireless IP cameras provide the ease of installation without cable hassles, although they may have limitations on range and power. The advantages of IP cameras over analog systems are substantial and contribute to the potential growth of the IP camera market in India. IP cameras offer superior image quality, precise motion detection capabilities, and greater flexibility in terms of installation and expandability, making them an attractive option for security applications. With advancements in technology, including Power over Ethernet (PoE) capabilities and wireless connectivity, IP cameras provide efficient and reliable solutions for diverse security needs. Furthermore, the long-term value and future-proof nature of IP camera systems, despite potentially higher initial costs, make them an appealing investment for both residential and commercial use. The evolving landscape of security and surveillance, combined with the benefits offered by IP cameras, presents a promising outlook for the growth and widespread adoption of IP camera technology in India.

Among many large camera deployments across India, the southern state of Telangana is one of the examples. Telangana demonstrated a commitment to enhancing public safety and security measures by inaugurating a vast network of 2,306 CCTV cameras funded by the Safe City. These advanced cameras were strategically installed across the Tri-Commissionerates and integrated into the central command control center. With ongoing investments in infrastructure and technology, the opportunity for IP camera market growth is further supported by initiatives aimed at modernizing security systems and addressing the evolving security challenges.

Figure 16: IP camera type market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	13.0	11.5	12.9	14.7	17.0	18.9	22.1	25.8	30.1	35.0	40.6
Revenue (in INR. Bn.)	33.6	30.1	33.1	36.7	42.3	47.1	60.6	72.8	86.1	101.6	119.6

*Projected

Source: Frost & Sullivan

- Analog camera

Much like the general video surveillance market trend, the analog cameras market in India experienced a year of decline in both volume and revenue in FY 2021 due to the covid pandemic. However, from FY 2022 onwards, there has been a gradual turnaround, with an increasing trend observed in both volume and revenue figures. In fiscal year 2025, the market saw a further improvement, reaching a volume of 13.2 million units and revenue amounting to INR. 12.0 Bn. The trend also indicates an increase in market performance, with a compound annual growth rate (CAGR) of 9.18% in volume and 8.37% in revenue forecasted for the period spanning fiscal year 2025 to fiscal year 2030. However, a lower analog camera growth rate reflects a shift in the market dynamics, driven by the increasing prevalence and demand for IP cameras, which offer enhanced features and capabilities compared to traditional analog cameras. Looking ahead, the forecasted figures for the analog cameras market indicate a trend of relatively flat or muted growth, in contrast to the robust expansion projected for the IP camera market during the same period. This divergence can be attributed to the advanced capabilities and technological superiority of IP cameras, which are reshaping the surveillance industry landscape in India.

Nevertheless, analog cameras retain a significant role in specific applications and industries, primarily due to their compatibility with legacy systems and cost-effectiveness. The market for analog cameras still holds relevance for segments that prioritize affordability and easy integration with existing infrastructure, despite the limitations in image quality and advanced features compared to IP cameras.

The gradual shift towards IP cameras, driven by the increasing demand for high-definition video quality and advanced surveillance capabilities, emphasizes the evolving needs of the security and surveillance industry. While the analog camera market may face a restrained growth trajectory in the coming years due to the expanding dominance of IP cameras, key drivers for potential growth include their cost-effectiveness for certain applications, compatibility with legacy systems, and established presence in specific sectors. Analog cameras appeal to budget-conscious consumers and businesses due to their cost-effectiveness compared to digital alternatives. Their compatibility with existing infrastructure allows for seamless integration and reduces replacement costs. Analog cameras are valued for their durability and reliability, making them well-suited for challenging environments and industries. Niche applications and compliance requirements in various sectors contribute to the continued demand for analog cameras.

Figure 17: Analog camera type market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	10.1	8.6	9.5	10.7	12.0	13.2	14.5	15.9	17.4	18.9	20.4
Revenue (in INR. Bn.)	9.6	8.1	8.9	9.9	11.0	12.0	13.3	14.5	15.6	16.9	18.0

*Projected

Source: Frost & Sullivan

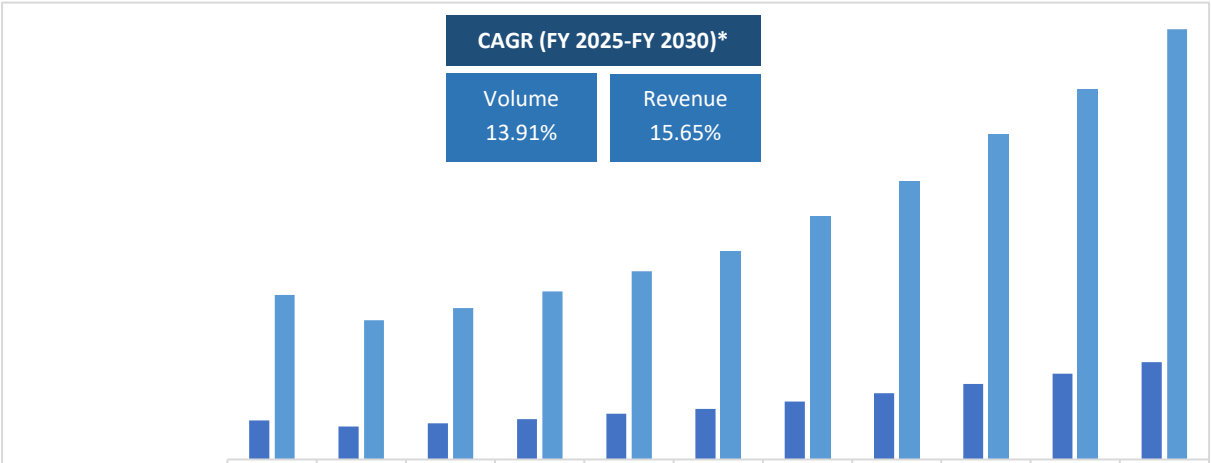
4.3.2. Recorder

The video surveillance recorder market in India has exhibited consistent growth in both volume and revenue over the years, indicating a positive trend in the market. From FY 2020 to FY 2025, there has been a steady increase in both volume and revenue (FY 2021 saw a market decline due to the pandemic), with FY 2025 showing significant growth with a volume of 5.0 million units and revenue amounting to INR. 20.5 Bn. This growth trajectory is likely to continue into the forecast years, with substantial increases expected in both volume and revenue. By FY 2030, the volume is estimated to reach 9.6 million units, with revenue estimated to be INR. 42.4 Bn. Market growth during FY 2025 to FY 2030 is expected at CAGR 15.65% (for revenue) and CAGR 13.91% (for volume). The market promising for the surveillance recorder market in India, underscoring a growing demand for these systems.

The Indian video surveillance recorder market has experienced a surge in growth, attributed to various contributing factors. One significant factor is the growing demand for security solutions in response to heightened security concerns arising from increasing crime rates and terrorism threats. Network video recorders (NVRs) and digital video recorders (DVRs) have become pivotal components of

surveillance systems, serving as the backbone by storing valuable video evidence. The Government of India's Smart Cities Mission has played a vital role in driving the demand for surveillance systems, particularly NVRs, by relying on video surveillance for various purposes such as traffic management, public safety, and monitoring critical infrastructure. Technological advancements in storage technology have notably increased the appeal of NVRs and DVRs, with higher storage capacities allowing for longer recording durations and improved video quality. Additionally, the integration of features like cloud storage and connectivity with smart home systems has contributed to their increasing adoption. The unmatched benefits of NVRs and DVRs have also been instrumental in the continued growth of the market. These recorders offer enhanced security by deterring crime and assisting law enforcement investigations through recorded evidence. The rising popularity of IP cameras has also driven the demand for NVRs, creating a ripple effect that has boosted the NVR market. Specific initiatives and developments have further fueled the growth of the Indian surveillance recorder market. For example, the Ministry of Electronics and Information Technology's (MeitY) initiative to promote the adoption of video surveillance systems in public places, offering subsidies and encouraging the use of NVRs for efficient storage and management of captured footage. These developments and initiatives have collectively contributed to the accelerated growth and security enhancements within the Indian video surveillance recorder market.

Figure 18: Recorder market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	3.8	3.3	3.6	4.0	4.5	5.0	5.7	6.5	7.4	8.4	9.6
Revenue (in INR. Bn.)	16.2	13.7	14.9	16.5	18.5	20.5	24.0	27.5	32.0	36.5	42.4

*Projected

Source: Frost & Sullivan

- Network Video Recorder (NVR)

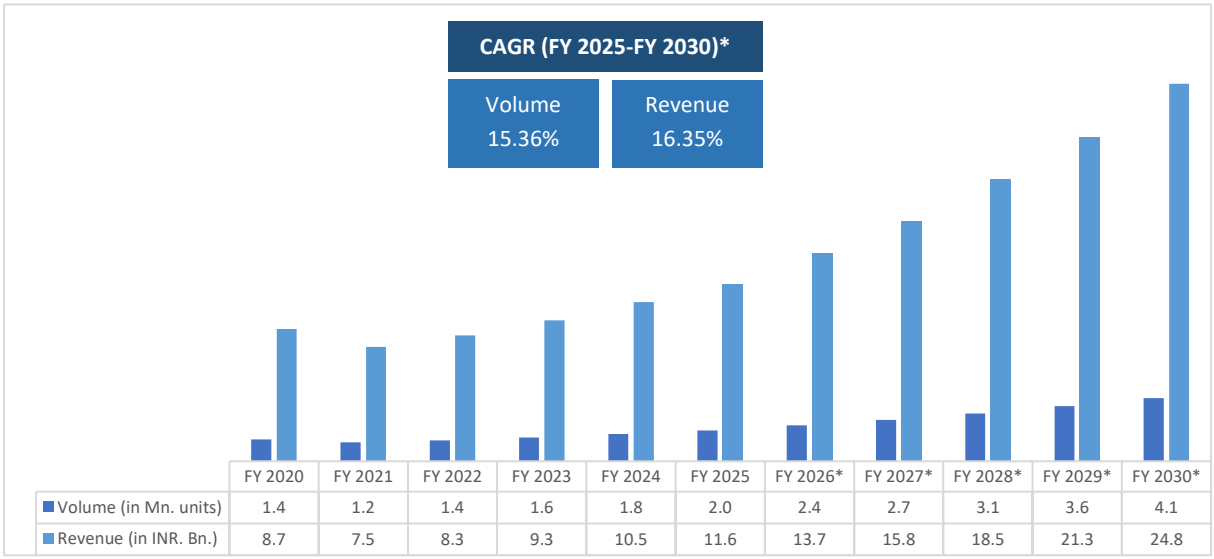
The NVR market in India has demonstrated meaningful rise from FY 2020 to FY 2030. Notably, in the projected fiscal year 2030, the volume of NVR units is expected to reach 4.1 million units, generating a revenue of INR. 24.8 Bn. This upward trajectory is further highlighted by the compounded annual growth rate (CAGR) from FY 2025 to FY 2030, which is estimated to be 15.36% for volume and 16.35% for revenue. The continued rise in the adoption of NVRs in the Indian market suggests a favorable outlook for this segment.

One of the key drivers behind the specific growth of NVR recorders in India is the emergence of advanced technologies such as 5G. The rollout of 5G technology promises faster data transfer speeds,

facilitating the transmission of large video files from IP cameras to NVRs. This results in an increased demand for NVRs equipped with higher bandwidth capabilities, positioning them as integral components in modern surveillance systems. Also, the advancements in video surveillance like AI driven analytics, facial recognition, and IoT integration demands higher capacity NVRs.

The increasing lifespan and superior image quality offered by NVRs compared to traditional digital video recorders (DVRs) have bolstered their popularity. NVR systems are known to have a longer lifespan of 8 to 10 years, outlasting the 3 to 4-year lifespan of DVR systems. This longevity, combined with enhanced image quality, positions NVRs as more reliable and efficient solutions for surveillance needs. Such benefits have led to a shift towards the adoption of NVRs in various sectors, including retail and smart cities, creating lucrative opportunities for manufacturers and driving the growth of the NVR market in India. Furthermore, the escalating demand for traffic surveillance and control systems, attributed to the global increase in population and vehicular traffic, highlights the crucial role of NVRs in effective traffic management and accident prevention. The urgent need for advanced surveillance technology to address road safety challenges propels the demand for NVRs, particularly for applications in traffic surveillance systems, positioning them as essential tools for enhancing public safety.

Figure 19: NVR market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	1.4	1.2	1.4	1.6	1.8	2.0	2.4	2.7	3.1	3.6	4.1
Revenue (in INR. Bn.)	8.7	7.5	8.3	9.3	10.5	11.6	13.7	15.8	18.5	21.3	24.8

*Projected

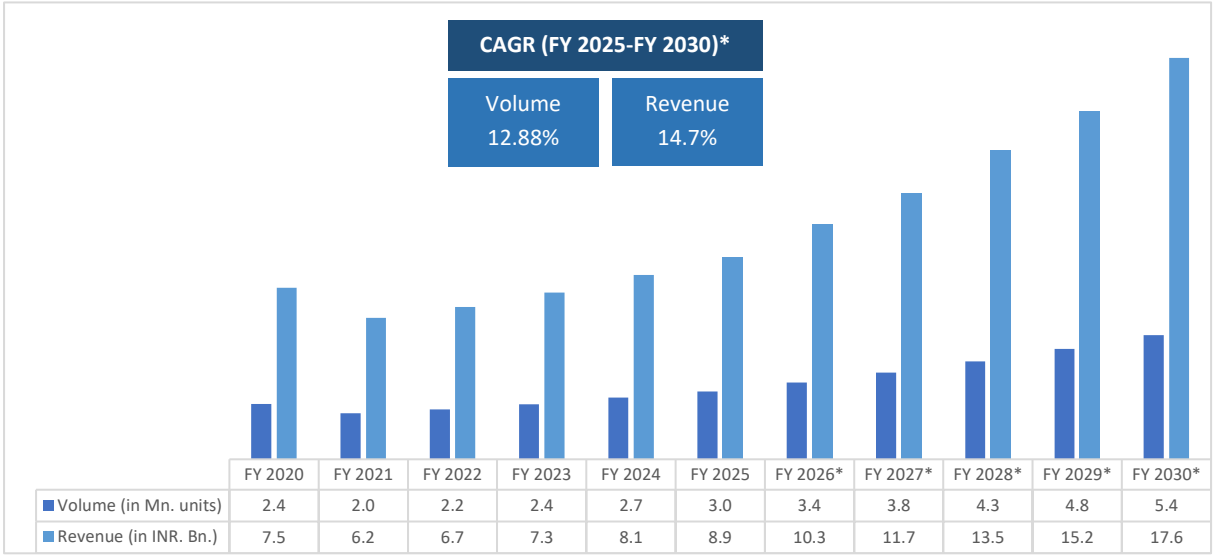
Source: Frost & Sullivan

- Digital Video Recorder (DVR)

The DVR market in India has shown a moderate growth pattern, characterized by fluctuations in volume and revenue figures over the years. It exhibited a different growth trajectory compared to NVRs. The growth has been low for DVR as compared to NVR. However, the segment has demonstrated steady progress. Notably, FY 2030 marks a significant upturn, with the volume of DVR units reaching 5.4 million units and generating a noteworthy revenue of INR. 17.6 Bn. The compounded annual growth rate (CAGR) for the DVR market from FY 2025 to FY 2030 reflects a moderate yet encouraging trend, with a projected 12.88% growth for volume and a commendable 14.7% growth for revenue. This data indicates a positive outlook for the future of the DVR segment, emphasizing a pattern of steady and moderate expansion.

One significant reason for the muted growth of the DVR market emerged from the widespread adoption of IP cameras. The security industry's increasing preference for IP cameras, which offer superior image quality and scalability, has naturally led to a reduced demand for DVRs. DVR systems require coaxial cables which are often bulky and limit installation options, especially for areas where wiring is a challenge. Wired cable length beyond 300 feet causes signal degradation. Also, the rise of cloud-based surveillance has presented a significant challenge for traditional DVR manufacturers as consumers and businesses show a preference for the advantages offered by cloud-based solutions. This shift in demand has compelled DVR manufacturers to adapt to the changing landscape, driving the need for innovation and differentiation to remain competitive amidst evolving technological preferences. The industry has witnessed a transformation, compelling companies to invest in research and development to stay relevant in the evolving market.

Figure 20: DVR market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	2.4	2.0	2.2	2.4	2.7	3.0	3.4	3.8	4.3	4.8	5.4
Revenue (in INR. Bn.)	7.5	6.2	6.7	7.3	8.1	8.9	10.3	11.7	13.5	15.2	17.6

*Projected
Source: Frost & Sullivan

4.3.3. Encoder

The video encoder market experiences growth driven by the escalating demand for high-quality video streaming and broadcasting across multiple platforms. Video encoders are essential in converting video signals into digital formats suitable for transmission over the Internet and other networks. The increasing consumption of online video content, the proliferation of OTT services, and the rise in live-streaming activities are the key drivers behind the market expansion. The continuous technological advancements in compression algorithms like H.265 (HEVC) and upcoming codecs such as AV1 are improving compression rates while preserving video quality, enabling efficient data transmission and storage. These advancements cater to the growing demand for higher resolutions like 4K and 8K, which require more bandwidth and storage capacity. The integration of artificial intelligence (AI) and machine learning (ML) in hardware encoders is a significant trend, enhancing real-time video processing capabilities and optimizing network resources.

Leading players such as Cisco, Harmonic, and Axis Communications are spearheading innovations in the video encoder market. The market holds promising growth potential given the evolving video standards, the global rollout of 5G networks, and the increasing demand for immersive experiences

like virtual reality (VR) and augmented reality (AR). Overall, both the Network Video Encoder and Video encoder markets are positioned for substantial growth, driven by technological advancements, increasing demand for high-quality video solutions, and the evolution of surveillance and broadcasting technologies across various industries. Strategic partnerships, advancements in compression technologies, and a focus on enhancing security and surveillance infrastructure will play crucial roles in shaping the future landscape of these markets.

Figure 21: Encoder market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	2.0	1.7	1.9	2.1	2.4	2.6	2.8	3.1	3.4	3.7	4.0
Revenue (in INR. Bn.)	9.0	7.7	8.5	9.4	10.5	11.2	12.1	13.0	14.0	15.0	16.0

*Projected
Source: Frost & Sullivan

4.3.4. Software

The software market in India has shown a consistent upward trend, with revenue figures increasing and a robust CAGR of 15.38% from FY 2025 to FY 2030. The revenue rose from INR. 13.4 Bn. in FY 2020 and expected to reach INR. 31.5 Bn. in FY 2030, driven by various factors. One of the primary drivers propelling the growth of the VMS software market is the continuous wave of technological innovation. The industry's focus on advancing product and service efficiency through ongoing technological evolution has contributed significantly to expanding the market's offerings and capabilities. The adoption of cutting-edge technologies such as Artificial Intelligence (AI), Internet of Things (IoT), and blockchain has led to improved operational efficiencies, innovative product development, and personalized customer experiences, fostering market growth.

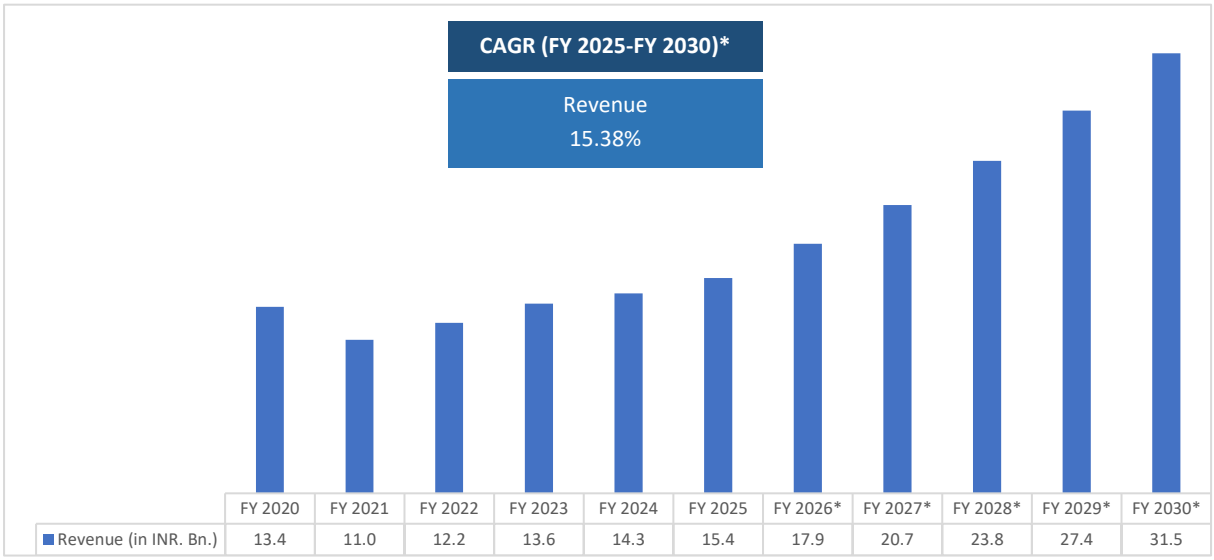
The software market has been experiencing a surge in demand, driven by several compelling factors that have fueled its rapid rise. Firstly, the integration of digital technologies such as artificial intelligence (AI) and machine learning (ML) has enhanced the features and capabilities of video management software solutions. This trend has been exemplified by the increasing adoption of CCTV cameras and video streaming services, particularly in sectors such as retail, healthcare, travel, transportation, and building & construction, leading to a notable demand for software solutions. Moreover, the deployment of VMS solutions by governments worldwide for surveillance and security applications has further amplified the market's growth potential. An additional factor behind the rising popularity of the software has been the emergence of VMS solutions with real-time event detection capabilities. These systems allow the classification, detection, and tracking of behavior patterns with

predefined objects, resulting in a significant role in driving sales growth. Real-time video analytics with high-performance capabilities play a crucial role in transforming standard surveillance networks into intelligent detection and alert systems, contributing to situation improvements and international trade climate enhancements.

Additionally, technological collaborations and product launches have played an instrumental role in the expansion of the VMS market. Notably, the cooperation between MOBOTIX AG and Milestone has led to the launch of a new software solution, MOBOTIX HUB, which demonstrates the industry's momentum toward advanced VMS offerings. The market's growth has been further propelled by the surging demand for VMS Software products and services, driven by factors such as population growth, urbanization trends, and evolving consumer preferences. Favorable government measures, such as renewable energy subsidies and carbon pricing, have also positively impacted market momentum by incentivizing the adoption of VMS Software solutions. Despite the challenges such as upfront costs, infrastructure needs, and market competition, the VMS Software market's overall trajectory appears optimistic due to its increasing demand, technological advancements, and favorable regulatory environment. The industry's focus on addressing these challenges and leveraging the opportunities presented by emerging trends positions the VMS Software market in India for continued expansion and growth in the foreseeable future.

Figure 22: Software market size (in INR. Bn.), India,

FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Revenue (in INR. Bn.)	13.4	11.0	12.2	13.6	14.3	15.4	17.9	20.7	23.8	27.4	31.5

*Projected

Source: Frost & Sullivan

4.4. Market size and forecast by industry segments - revenue and volume

4.4.1. Commercial

India's commercial video surveillance market showed a steady growth since fiscal year FY 2021. This trend is projected to continue through FY 2030. Sales in FY 2025 reached a noteworthy 14.7 million units, generating revenue of INR. 39.4 Bn. Looking ahead, the segment is anticipated to maintain a robust growth trajectory with a CAGR of 12.9% for unit sales and 15.8% for revenue, from FY 2025 to FY 2030.The prospective growth of the commercial segment within the video surveillance market in India is underpinned by a series of initiatives and developments aimed at fortifying security measures

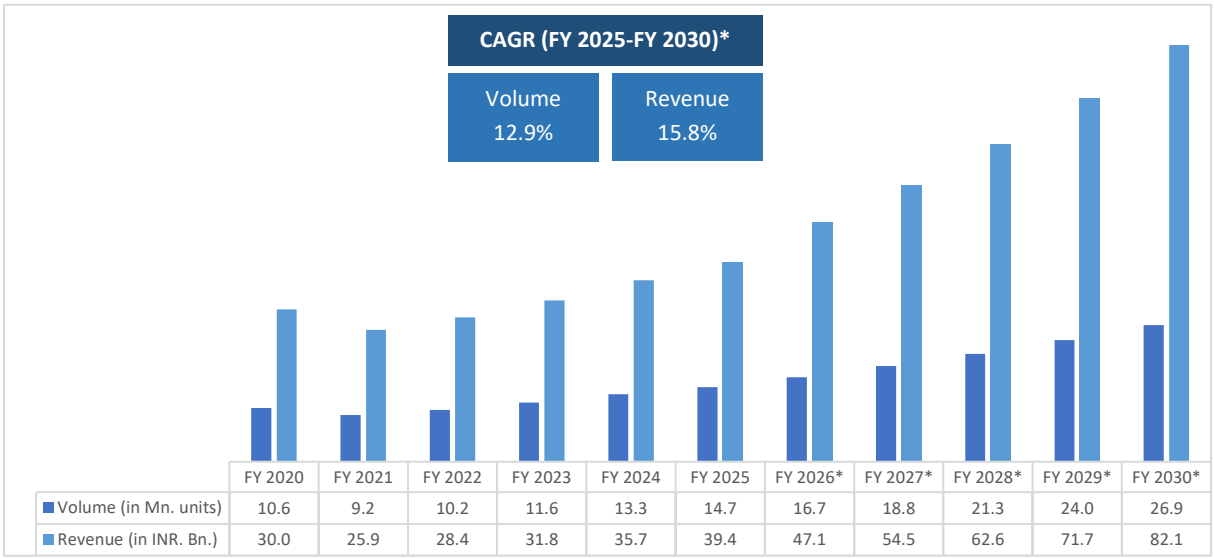
across diverse sectors. In the Banking, Financial Services, and Insurance (BFSI) domain, the Reserve Bank of India (RBI)'s security guidelines mandate rigorous security measures, including the installation of CCTV cameras at entry and exit points of the strong room and the common areas of operation. This, along with the Safe Banking Initiative launched by the Indian Banks' Association (IBA), underpins the substantial growth impetus within the BFSI sector. The combined effect of these initiatives and regulations propels the demand for advanced surveillance solutions and strengthen security measures in banks.

In the hospitality sector, the government's focus on developing world-class tourist infrastructure as a part of Incredible India Tourist Infrastructure Development Scheme is expected to elevate security measures in hotels and tourist destinations. The installation of CCTV is poised to play a pivotal role in ensuring guest and visitor safety in public areas, parking lots, and guest rooms, thereby enhancing the overall experience and building trust with potential customers.

For the important healthcare sector, growth is driven by a systematic approach to enhance patient safety, regulatory compliance, and operational efficiency. Key security challenges in this vertical include limiting access to private areas, preventing record tampering or theft of resources, monitoring staff and visitor behaviour, tracking foot traffic and overseeing daily operations. Specifically, video surveillance solutions play a crucial role in safeguarding the maternity ward, facilitating infant safety, and location monitoring to prevent threats such as abduction and baby swapping. The integration of video surveillance with access control and emergency communication systems offers a comprehensive security solution for newborns, the most vulnerable patients in hospitals. Intrusion detection systems, perimeter monitoring, and access control systems are instrumental in providing overall security, preventing unauthorized access, and maintaining a safe environment for patients and staff alike. This integrated approach, aimed at addressing specific safety and security concerns within healthcare facilities, underpins the significant growth of video surveillance in the sector.

The construction of commercial buildings would also spearhead the adoption of video surveillance, with initiatives like the Green Rating for Integrated Habitat Assessment (GRIHA) would promote the use of efficient security systems, including intelligent video surveillance solutions. The tailored security measures, alongside state-level Safe City projects, encompasses the installation of centralized and extensive surveillance systems, are poised to further bolster public safety and security across various sections of the commercial segment. These collective initiatives and developments underscore a transformative landscape for video surveillance in the Indian commercial sector.

Figure 23: Commercial market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	10.6	9.2	10.2	11.6	13.3	14.7	16.7	18.8	21.3	24.0	26.9
Revenue (in INR. Bn.)	30.0	25.9	28.4	31.8	35.7	39.4	47.1	54.5	62.6	71.7	82.1

*Projected

Source: Frost & Sullivan

4.4.2. Retail

Over the years, video surveillance systems in retail establishments have emerged as a critical component for enhancing security and preventing theft and shoplifting. These systems are strategically placed in crucial areas such as entrances, cash counters, aisles, storage areas, and parking lots to monitor the entire premises. They play a pivotal role in identifying potential threats, and protecting assets, which ensures a safe shopping environment for customers. The growth of the retail establishments video surveillance market in India is because of multiple reasons. Firstly, there has been a significant rise in the adoption of video surveillance systems due to their ability to prevent theft and shoplifting, thereby safeguarding assets and ensuring customer safety. Secondly, the remote monitoring capabilities offered by these systems ensure 24-hour coverage, providing security personnel with alerts and analytics to detect unauthorized activities even outside normal business hours. Another reason for the consumerization of CCTV systems in retail is because of the benefits that video analytics offer – customer count, energy management, automatic number plate recognition, motion detection, etc. – all of which add to the retail use-cases beyond just security.

With the increasing awareness about the benefits of video surveillance systems in retail establishments, the market is likely to witness sustained growth. As per Frost & Sullivan, the retail video surveillance market size and volume in India would experience a strong growth trend till FY 2030. Sales volume is likely to increase from 4.7 million units in FY 2020 to an estimated 12.5 million units in FY 2030. Correspondingly, the revenue is likely to grow from INR. 13.4 Bn. in FY 2020 to a projected INR. 38.0 Bn. in FY 2030. This represents a growth rate of 13.24% in volume and 16.2% in revenue for the period between FY 2025 and FY 2030.

Figure 24: Retail establishments market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	4.7	4.1	4.6	5.3	6.1	6.8	7.7	8.7	9.8	11.1	12.5
Revenue (in INR. Bn.)	13.4	11.7	12.9	14.4	16.3	18.3	21.8	25.2	29.0	33.2	38.0

*Projected
Source: Frost & Sullivan

4.4.3. Common infrastructure

Common infrastructure refers to smart cities, traffic systems, and public transport. The industry vertical showed noteworthy growth from FY 2021 to FY 2025 (FY 2020 experienced a de-growth due to Covid-19 pandemic) and likely to continue till FY 2030. In 2025, the industry segment was sized at INR. 26.4 Bn. with volumes at 9.9 million units. From FY 2025 to FY 2030, the market is expected to grow at CAGR 18.6% in revenue and 15.6% in volume. This trajectory implies the rising demand for video surveillance systems within common infrastructure settings such as smart cities, traffic systems, and public transport. A blend of initiatives such as infrastructure projects and market drivers has stimulated the rise in the video surveillance market within the common infrastructure space. Notably, video surveillance plays a pivotal role in public safety monitoring in high-risk areas. The Surat Smart City project utilizes video surveillance for traffic management, waste management, and public safety. These applications extend to initiatives like the Smart Cities Mission and Traffic Management Initiatives, propelled by policies such as the promotion of Intelligent Transport Systems (ITS) by the Ministry of Road Transport and Highways (MoRTH).

The Smart City Mission, which was initiated by the Government of India in 2015, has played a very significant role in driving the adoption of advanced surveillance technologies, particularly CCTV networks. The plan to develop 100 smart cities encompasses integrated command and control centers, smart mobility, energy, water supply, sanitation, public spaces, as well as economic and social infrastructure, thereby fostering the increased utilization of surveillance technologies in urban environments. One such example is of Surat Smart City project which utilizes video surveillance for traffic management, waste management, and public safety.

India's transportation sector serves a vast population of 1.4 billion people through an extensive network of ports, highways, railways and airports. As the demand for robust transportation infrastructure and services rises, it is essential to address the security and operational challenges faced by the industry. The Indian transportation sector grapples with issues such as pickpocketing on public transport, unmonitored traffic law violations, threats to sensitive vehicles (such as bank cash vans and

VIP transport), unmonitored cargo leading to potential damage, compatibility issues with variable voltages and the impact of vibrations and shocks on hardware. Additionally, establishing bona fide evidence for incidents and preventing vandalism are significant concerns. The transportation sector has also seen significant progress in surveillance, with the installation of CCTV systems in public transport vehicles such as buses and train coaches. These surveillance systems are now equipped with features like GPS, 3G/4G, and Wi-Fi capabilities, which reflect the government's commitment to ensuring passenger safety. Indian Railways has taken substantial measures to enhance security by experimenting with facial recognition-enabled CCTV cameras within train compartments.

Video surveillance and CCTV systems in the smart traffic domain have contributed to real-time traffic monitoring, congestion identification, traffic violation detection, and incident management. These systems employ advanced AI technology to dynamically optimize traffic signals, recommend alternative routes, and enhance public transportation efficiency, ultimately fostering urban development and improving overall quality of life. These collective efforts, along with the integration of surveillance technologies across various infrastructure and public safety initiatives, are anticipated to drive significant growth in the video surveillance market within the common infrastructure segment in India. The harmonization of advanced surveillance systems with urban development projects underscores the evolving landscape of video surveillance, establishing it as a fundamental aspect of safety and security within common infrastructure settings, and ultimately paving the way for a secure and technologically advanced future.

Figure 25: Common infrastructure market Size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	6.6	5.8	6.5	7.6	8.8	9.9	11.5	13.4	15.5	17.8	20.4
Revenue (in INR. Bn.)	18.6	16.3	18.1	20.6	23.7	26.4	32.6	38.8	45.6	53.3	62.1

*Projected

Source: Frost & Sullivan

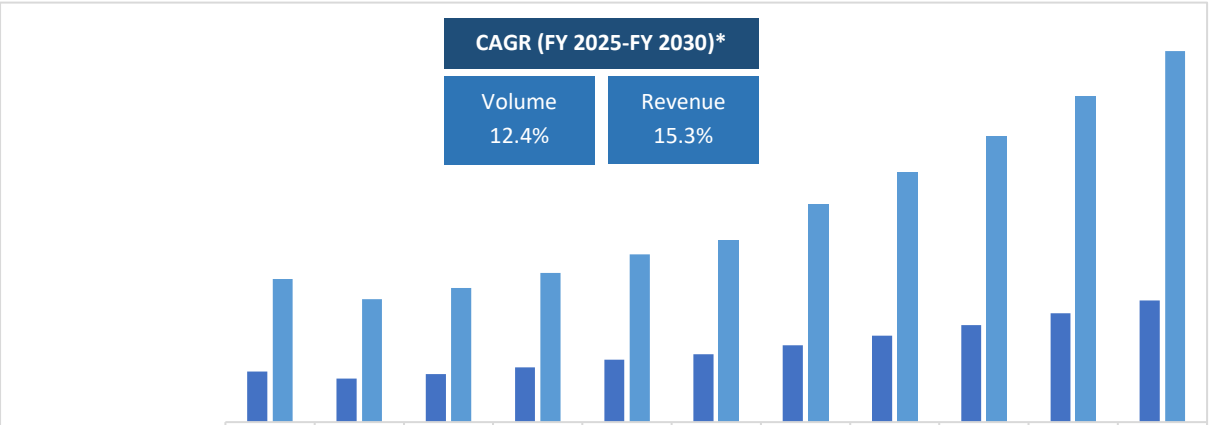
4.4.4. Residential

India's residential video surveillance market has been on a steady climb since fiscal year (FY) 2020, with this trend expected to continue until FY 2030. In 2025, a significant 2.9 million units are to be sold, generating revenue of INR. 7.8 Bn. The market is projected to experience a healthy Compound Annual Growth Rate (CAGR) of 12.4% in terms of unit sales and 15.3% in revenue from FY 2025 to FY 2030. Video surveillance in residential settings plays a crucial role in ensuring the safety and well-being of residents by providing comprehensive coverage. These systems are strategically placed in common

areas like entry points, parking lots, community halls, and shared spaces, as well as hallways and staircases to enhance security measures. The placement of cameras aids in monitoring movements, detecting unusual activities, and preventing accidents or unauthorized access, creating a safer living environment for residents. The deployment of digital entry points, such as biometric scanners and facial recognition systems, in residential complexes has enhanced access control and monitoring capabilities, revolutionizing security measures and ensuring swift responses to potential threats.

One of the primary reasons for the growth of residential video surveillance systems in India is the rising crime rates, including property thefts and break-ins. Video surveillance acts as a deterrent to criminals and provides residents with a sense of security. As more people move into apartments and gated communities, video surveillance fills the security gap, especially in environments lacking traditional neighborhood security. The affordability of these systems due to rising disposable incomes has made them accessible to a broader segment of the population. Technological advancements have been instrumental in driving the growth of residential video surveillance systems. Features such as wireless connectivity for easy installation, cloud storage for remote access, mobile app integration for real-time monitoring, and AI-powered functionalities like motion detection and facial recognition have made these systems user-friendly, affordable, and more secure. Moreover, the continuous innovations in surveillance technology are expected to further drive the expansion of the market by offering enhanced security solutions tailored to residential needs. As technology continues to evolve and become more accessible, the demand for advanced surveillance solutions in residential settings is set to grow, paving the way for a safer and technologically advanced living environment for residents.

Figure 26: Residential market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	2.2	1.9	2.1	2.3	2.7	2.9	3.3	3.7	4.2	4.7	5.2
Revenue (in INR. Bn.)	6.1	5.3	5.8	6.4	7.2	7.8	9.3	10.7	12.3	14.0	15.9

*Projected

Source: Frost & Sullivan

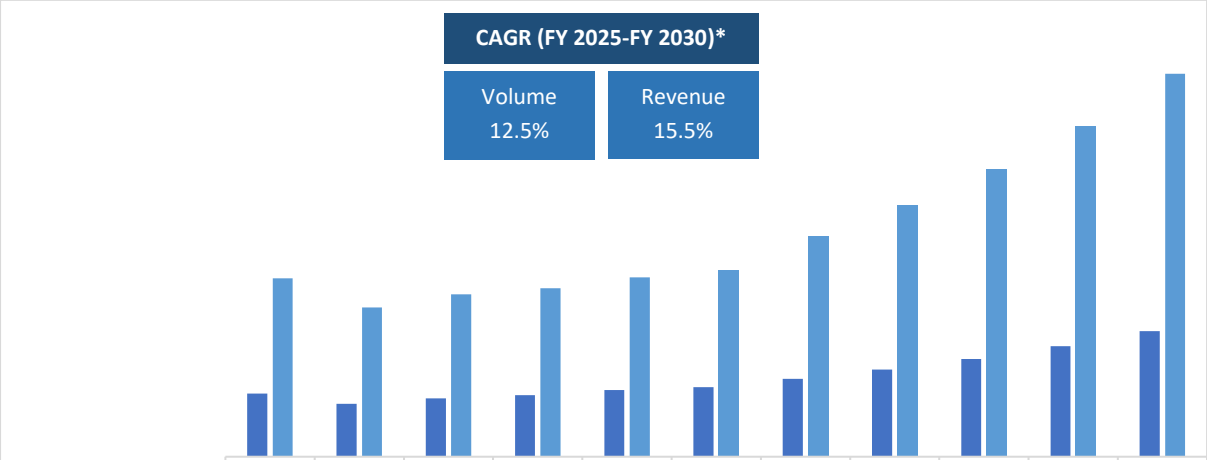
4.4.5. Other industry segments

Other industry segments, which include industrial and education, have demonstrated a growth from FY 2021 to FY 2025 – both in terms of revenue and volume. In 2025, the total volume sold was 5.3 million units, with revenue amounting to INR. 14.3 billion. The anticipated volume growth during the forecast period stands at 12.5%, while the revenue is expected to grow at a CAGR of 15.5%. The initiative taken by educational institutions and the state government to install CCTV cameras in schools

and examination halls has been a pivotal factor driving the growth of the video surveillance market in the education segment. State governments like Uttar Pradesh have made it mandatory to install CCTV cameras in school vans and within school premises, emphasizing the importance of safety and security for students. These policy measures not only ensure a secure environment but also reflect the increasing adoption of surveillance technologies in the education sector, indicating a broader shift towards comprehensive surveillance in educational institutions.

In the industrial segment, video surveillance plays a critical role in enhancing operational efficiency by monitoring production lines, logistics, and other operations, leading to increased productivity and smooth operations. Key challenges in this sector include preventing unauthorized entry by vehicles and individuals, managing staff work hours, ensuring process safety, restricting access to critical areas, detecting suspicious behaviour to mitigate accidents, and safeguarding against terrorist attacks and vandalism. Surveillance systems aid in monitoring employee activities, improving productivity, and ensuring compliance with company policies, particularly in sectors like manufacturing, and logistics.

Figure 27: Others market size (in INR. Bn.) and volume (in Mn. units), India, FY 2020-FY 2030



	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026*	FY 2027*	FY 2028*	FY 2029*	FY 2030*
Volume (in Mn. units)	4.8	4.1	4.5	4.7	5.1	5.3	6.0	6.7	7.5	8.5	9.6
Revenue (in INR. Bn.)	13.7	11.4	12.4	12.9	13.7	14.3	16.9	19.3	22.0	25.3	29.3

*Projected
Source: Frost & Sullivan

4.5. Market evolution and trends

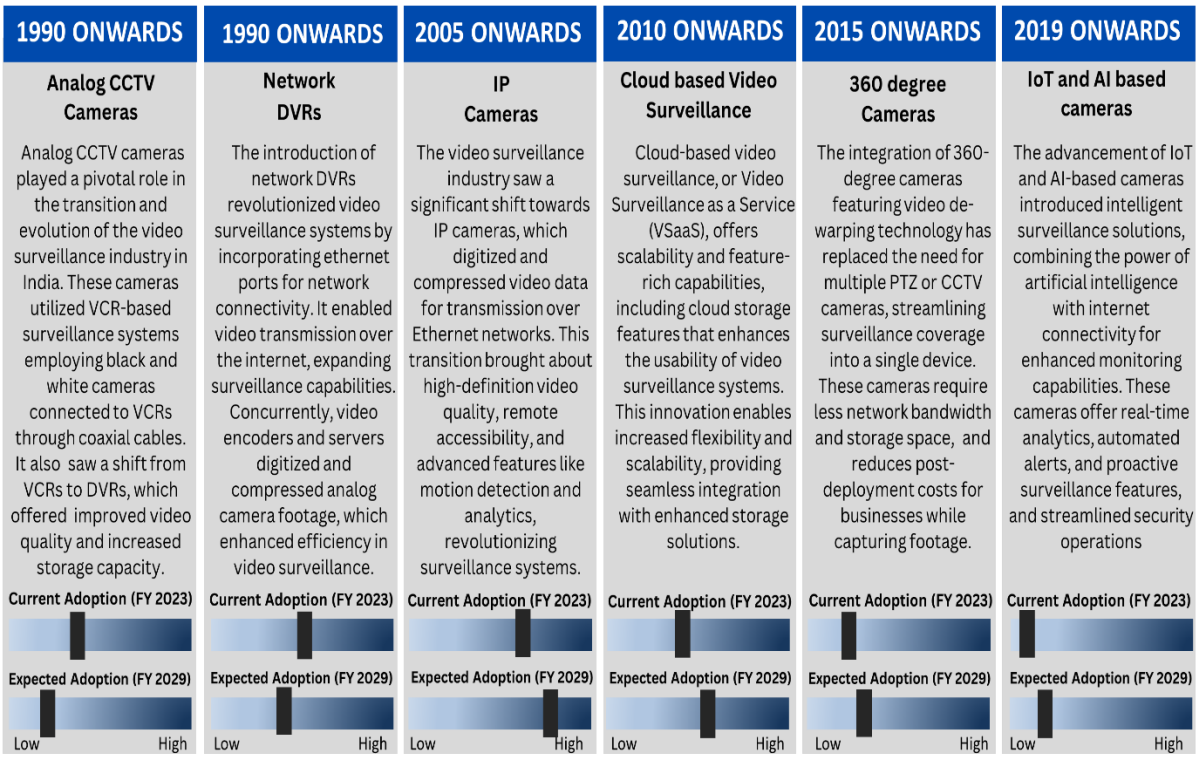
Much like the global market, the Indian video surveillance and security market has witnessed remarkable evolution and transition over the years. The shift from analog cameras to IP cameras is a significant shift in surveillance technology. It brought about a revolutionary change by digitizing and compressing video data for transmission over Ethernet networks. This transformation not only delivered high-definition video quality but also facilitated remote accessibility and introduced advanced features such as motion detection and analytics, ultimately revolutionizing the landscape of surveillance systems.

As the market progressed, enterprises looked for CAPEX light and OPEX based models and hence the adoption of cloud-based video surveillance, or Video Surveillance as a Service (VSaaS), marked a pivotal shift in the industry. This innovation offered scalability, flexibility, and feature-rich capabilities, incorporating cloud storage features to enhance the usability of video surveillance systems. This

integration of cloud storage solutions provided businesses with enhanced storage capacity and seamless integration and represented a significant development in modern surveillance technology. The introduction of 360-degree cameras featuring video de-warping technology streamlined surveillance coverage into a single device, reducing the need for multiple PTZ or CCTV cameras. This shift not only conserved network bandwidth and storage space but also led to improved video quality and enhanced surveillance capabilities.

The emergence of IoT and AI-based cameras is seen as a significant advancement in the video surveillance and security market and considered as a major leap forward in technological capabilities. These intelligent surveillance solutions integrate the capabilities of artificial intelligence with internet connectivity, which helps in enabling real-time analytics for immediate examination of video data. They also incorporate automated alert functionalities, promptly notifying designated personnel in case of any irregularities detected. These systems are equipped with proactive surveillance features. This advancement improves security operations and brings in a more advanced era of monitoring capabilities, making surveillance systems in India more efficient and effective.

Figure 28: Video surveillance market evolution in India



Source: Frost & Sullivan

4.6. Growth drivers

The video surveillance market in India is expected to experience a steady growth and remain among the fastest growing markets. The country is rapidly witnessing substantial growth in infrastructure, bolstering of the ICT infrastructure, and coherent government schemes and initiatives that are expected to propel the video surveillance market. Following are the major growth drivers to the video surveillance market in India.

- **Rapid infrastructural development:** As per secondary research data, the Indian construction market is projected to reach $1.4 trillion by 2025, primarily driven by urban expansion, which

contributed to 9% of India's GVA in 2024-25[11]. It is estimated that approximately 600 million people will reside in urban areas by 2030, leading to a demand for an additional 25 million mid-range and affordable housing units. Government's initiative like the Smart City Mission aim to enhance the quality of life through modernized and technology-driven urban planning. With increasing foreign direct investments (FDIs) in the construction sector and growing investments in infrastructure development, the need for video surveillance solutions is likely to witness a significant upsurge in the years ahead as security and safety remains critical.

Beyond investing in the expansion of educational institutions, metro networks across cities, and the widening of the highway network, the Indian government harbors ambitious plans to bolster the nation's infrastructure that has use-cases of video surveillance as part of the security framework. The government intends to channel funds into the development of rail infrastructure, airports, and ports, as reflected in the upcoming infrastructural developments:

- Expansion of the number of airports in India from 140 to 220 by the year 2025.
- The development of a new 2,866-acre airport in Navi Mumbai, with the capacity to accommodate 90 million passengers by 2036.
- Establishment of a new airport in Delhi.
- Overhaul of more than 550 railway stations across India.
- Creation of infrastructure ahead of anticipated demand to handle future growth in passenger and freight traffic up to the year 2050.
- The development of six new mega ports as part of the Sagarmala Project.

- **Demand for CCTV in various industry verticals:** Several state governments in India have started to deploy surveillance systems across high-traffic and accident-prone areas and toll plazas to get real-time traffic data. This is done not only to identify traffic rule violations and offenders but also to revamp the road infrastructure. For instance, to ensure security of the citizen, the Delhi transport department planned to install high-resolution CCTV cameras at all the bus queue shelters across the national capital. Similarly in another case, it has been decided that AI-based CCTV cameras will be installed in the bus shelters in the city of Chandigarh. The cameras would be integrated with the Intelligent Transport System (ITS) already in place on buses. The AI-based CCTVs will ensure safety and security at bus shelters and would come with face recognition technology.

  For the education sector, bodies like CBSE and the CISCE have already instructed affiliated schools to install CCTV cameras at vulnerable points. State governments of Delhi, Maharashtra, and Karnataka, have already made it mandatory to install CCTV cameras in schools. Beyond just class-rooms, state governments are also making it mandatory to install CCTV cameras in school buses. One such example is that of the UP government that has issued a notification making installation of CCTV cameras in school vans and buses a must. In one of the most critical sectors like banking and financial services, the Reserve Bank of India (RBI) in 2016 instructed all banks to have their transactions under CCTV surveillance. Later in 2018, the central bank even instructed cash vans transporting money should also have CCTV surveillance.
- **High crime rate:** The incidence of crimes in India has shown a decline in recent years. In 2020, the crime rate stood at 487.8 incidents per 100,000 population, decreasing to 445.9 in 2024.

[11] Press Release, PIB Delhi (Data from Ministry of Statistics & Programme Implementation), 30 MAY 2025, Press Release:Press Information Bureau

It is worth noting that urban areas in India tend to record higher crime rates compared to rural areas. The strategic placement of CCTV cameras in cities plays a crucial role in monitoring and curbing criminal activities. State governments have taken proactive steps by installing CCTV cameras across urban areas to enhance the security and well-being of residents. In Delhi, for instance, there are over 2.46 lakh cameras installed across the 70 assembly constituencies as part of the state government's CCTV initiative. Similarly, Hyderabad boasts around 3 lakh CCTV cameras to monitor its population exceeding 1 crore. With the increasing adoption of technology by state and local authorities, the demand for CCTV installations is expected to further escalate in the coming years.

- **State Government laws mandating CCTV installations:**
    - **Gujarat:** The Gujarat Public Safety (Measures) Enforcement Act, 2022[12] mandates CCTV installations in All establishments "frequented by such number of people as may be prescribed," including commercial, industrial, religious, educational, hospital, sports, and transport hubs.
    - **Bihar:** The Bihar Public Safety (Measures) Enforcement Act, 2024[13] mandates all establishments in notified areas where public gatherings are likely, to install and maintain CCTV/public surveillance systems.
    - **Assam:** The Assam Public Safety (Measures) Enforcement (Amendment) Act, 2023[14] mandates businesses/offices with at least five people, government buildings, public institutions, transport hubs, educational and health institutions, places of congregation, and other notified establishments to install and maintain CCTVs and access control at entry/exit and common areas.

4.7. Industry regulation across industry verticals

Education

- **Central Board of Secondary Education (CBSE):** The Central Board of Secondary Education (CBSE) introduced new guidelines for schools regarding the use of CCTV cameras during the Class X and XII board examinations in the academic year 2022-23. These regulations necessitate recording the annual exams via videography for the ongoing academic year. Non-compliance with these rules will lead to disciplinary measures, including a fine of Rs 50,000 for schools without CCTV cameras in every classroom. In the previous academic year 2021-22, 36 schools were identified for not adhering to the guidelines. CBSE further instructed schools to position cameras in vulnerable spots within the premises and ensure their continuous operation. These changes aim to bolster security, uphold exam integrity, and create a secure environment for students and staff.
- **Indian School Certificate Examinations (ICSE):** The Council for the Indian School Certificate Examinations (CISCE) has made it a requirement for schools to install CCTV cameras for security and exam integrity. Schools are required to have cameras in various areas like classrooms, examination halls, corridors, libraries, and more to ensure safety. The video

[12] The Gujarat Government Gazette, Government Central Press, 7th April 2022, Gujarat Public Safety (Measures) Enforcement Act, 2022

[13] The Bihar Public Safety (Measures) Enforcement Act (2024), Government of Bihar, 14th March 2024, The Bihar Public Safety (Measures) Enforcement Act, 2024

[14] The Assam Public Safety (Measures) Enforcement (Amendment) Act (2023), Legislative Branch, Government of Assam, 16th November 2023, The Assam Public Safety (Measures) Enforcement (Amendment) Act, 2023

footage needs to be stored for at least two weeks. The initiative reflects a proactive step to safeguard exam processes and maintain fairness. Many schools have already installed CCTV cameras for various purposes, but the recent emphasis on using them during exams further underscores their increasingly vital role in maintaining security and integrity, thereby indicating a broader shift towards more comprehensive surveillance in educational institutions. This change also shows how schools and examination boards are working together to make exams fair and trustworthy by improving security measures in the future.

- **Uttar Pradesh Government:** In Uttar Pradesh, the government has made it mandatory to have CCTV cameras in every school van to ensure students' security. It emphasizes the importance of closely overseeing students while they commute. In addition to school vans, the state government has extended its initiative to include the installation of CCTV cameras within schools. This measure is aimed at fostering a secure environment for the students.

Banking

- **Reserve Bank of India (RBI):** The Reserve Bank of India (RBI) has mandated the installation of CCTV cameras within banks to ensure enhanced security and transparency. According to RBI guidelines, banks are required to install CCTV cameras at the entry and exit points of safe deposit areas and common operation areas. These recordings must be retained for a minimum period of 180 days. In the event of a complaint regarding unauthorized access to a customer's locker or any report of theft or security breach, the bank is obligated to preserve the CCTV recordings until the police investigation is concluded, and the dispute is resolved. The central bank has instructed banks to ensure that all transactions conducted at their branches and currency chests are monitored via CCTV surveillance, aimed at preventing errors and encourage responsibility and transparency in banking activities. These rules also highlight RBI's dedication to strengthening security within the banking industry.

Jewelry

- **Andhra Pradesh Government:** The state government of Andhra Pradesh mandated the installation of CCTV surveillance in jewelry shops, which resulted in a significant 35% decrease in criminal incidents. Non-compliance with this regulation can lead to a fine of Rs. 5000 for shop owners. During meetings with gold merchants and jewelry workshop owners, police officials emphasize the importance of CCTV monitoring for preventing and promptly detecting thefts. This highlights the necessity for security measures in public spaces, specifically in jewelry shops and workshops, aligning with the AP Public Safety (Measures) Enforcement Act, 2013. This concerted effort aims to enhance safety and reduce criminal activities within the jewelry sector in Andhra Pradesh.

Law Enforcement

- **Court, Tribunals, Police Stations, and Office of the Investigative Agency:** The Supreme Court has emphasized the installation of CCTV cameras within court and tribunal premises for security purposes. This is intended to ensure safety and enhance the administration of justice. The demand for the installation of CCTV cameras in important courtroom locations across all States and Union Territories has been expressed by the Supreme Court as part of ensuring openness, disciplining court procedures, and prioritizing public interest and security. Such initiatives are integral for promoting a sense of security and discipline within courtroom

environments. The installation of CCTV cameras with audio recording capabilities is a crucial step toward maintaining transparency and ensuring robust security measures within legal proceedings. This move underscores the efforts to facilitate an environment of trust and accountability, thereby benefiting everyone involved in the judicial system. In addition, the highest court has also mandated the use of CCTV cameras in all police stations, and the office of the investigative agencies.

Road Transport and Highways

- **Ministry of Road Transport and Highways:** Section 136A of the Motor Vehicles Act, 1988 states that the Central Government to make rules for electronic monitoring and enforcement of road safety. It mentions the use of CCTV cameras as one of the devices to be used for electronic monitoring. Section 136A states that the state governments must ensure that CCTV cameras are to be placed at high-risk and high-density corridors on National Highways and State Highways and at critical junctions in major cities with a population over 1 million. The video footage should location, date and time stamp so that it can be used for issuing challans for any traffic violations. State Governments must ensure that appropriate warning signs are conspicuously placed before CCTV monitored stretches, notifying the public of their use.

4.8. Use of video surveillance across key industry verticals

Banking and financial services

In the banking and financial services setup, CCTV cameras are positioned at crucial points such as customer service areas, locker rooms, safe deposit areas, banking halls, etc. to monitor customer interactions and transaction areas effectively. The implementation of video surveillance systems has become pivotal in enhancing security measures and reducing criminal activities. One of the prominent advantages is the capability of surveillance systems to detect suspicious behavior and enable real-time alerts to potential security threats. Cameras play a significant role in monitoring bank locations even beyond operational hours, providing an added layer of security and oversight. The footage captured by these systems serves as crucial evidence for investigating incidents and resolving issues effectively. By using surveillance technology in banks, theft, robbery, and vandalism can be prevented effectively. By expanding video surveillance to far-off and remote ATM counters and important areas in banks, security teams can strengthen efforts to stop crimes and always stay vigilant.

Retail

Retail environments face a variety of security and operational challenges, including inadequate recognition of customers and staff, monitoring staff behaviour, preventing shoplifting and addressing the increased risk of break-ins after hours. Additionally, optimizing shop floor efficiency, tracking purchase invoices, deploying staff effectively during peak times, managing promotional offers and ensuring cleanliness are critical concerns.

Video analytics play an important role in retail. CCTV cameras powered with AI and video analytics help in motion detection, fraud detection, shoplifting prevention, heatmaps (create graphical representations of in-store roaming and identify customer time-spending patterns), face recognition (to understand customer delight, customer behavior, and preferences), monitor customer dwell time, energy management, queue management, employee efficiency, store layout optimization, implementing in-store marketing campaigns, etc. These use cases are beyond the primary use of video

surveillance systems for security monitoring. Today, most organized retail stores in India use CCTV cameras within their infrastructure that get monitored either centrally or from the owner's mobile phone.

Figure 29: Use-cases and benefits of video analytics in retail

Use-case	Purpose	Benefit
Motion Detection	To detect and prevent unauthorized entry and theft	Enhances security, reduces theft, and ensures compliance with store policies
Fraud Detection	To identify and prevent employee fraud in inventories, orders, or store statistics	Reduces losses due to internal theft and improves inventory management
Shoplifting Prevention	To monitor and prevent shoplifting by identifying intruders and thieves	Reduces losses due to theft and improves store security
Heatmaps	To create graphical representations of in-store roaming and identify customer time-spending patterns	Improves store layout, product placement, and customer navigation
Facial Recognition	To understand customer behavior and preferences related to specific products or services	Analyzes customer reactions to products, improves merchandising, and enhances customer engagement
Monitoring Customer Dwell Time	To track how long customers spend in specific areas of the store	Improves sales performance, optimizes product placement, and enhances customer engagement
Queue Management	To manage customer queues and improve checkout efficiency	Reduces customer wait times, improves checkout efficiency, and enhances customer satisfaction
Employee Efficiency	To monitor and evaluate employee performance	Identifies high-performing employees, improves employee accountability, and enhances overall store efficiency
Store Layout Optimization	To optimize store layout based on customer behavior and traffic patterns	Improves customer navigation, enhances sales, and optimizes store design
Customer Journey Analysis	To understand customer journeys, including inflow, movement, and demographics	Improves customer service, optimizes store operations, and enhances customer retention

Emergency Response	To detect and respond to emergencies quickly	Enhances security, improves emergency response times, and ensures safety
Energy Efficiency	To optimize lighting and energy use	Reduces energy costs, improves environmental sustainability, and enhances operational efficiency

Source: Frost & Sullivan

Retail is one of the industry verticals that highly use "Visual AI". Visual Artificial Intelligence (AI) is a technology that enables computers to interpret and understand visual data, such as images and videos, similar to how a human vision recognizes it. The technology combines AI with visual data analysis thereby allowing the computer to visualize and understand visual information from the real world. In retail, with Visual AI, businesses unlock the potential of business intelligence into customers, employees, and operations with visual analytics. It helps boost revenue, track customer experience, measure operational efficiency, identify employee indiscipline, and improve safety and compliance. In most cases, the solution can be used/integrated with the existing CCTV infrastructure making it even more useful for customers.

Commercial office

In commercial office buildings, the utilization of video surveillance coupled in with video analytics, particularly through CCTV systems, is crucial for bolstering security measures and safeguarding assets. Positioning of cameras in key areas such as entry points, lobby areas, corridors, elevators, and parking lots serves to deter unauthorized access, monitor visitor traffic, and ensure the safety of employees and visitors. By deploying CCTV systems, office building management can effectively manage security risks, prevent criminal activities, and respond promptly to any security incidents.

In recent times, commercial offices leverage the power of video analytics to monitor their premises. Mentioned below are some of the use-cases and benefits of video analytics in commercial offices.

Figure 30: Use-cases and benefits of video analytics in commercial office

Use-case	Purpose	Benefit
Identify Suspicious Activity	To detect and prevent unauthorized entry and theft	Enhances security, reduces theft, and ensures compliance with the office norms
Employee Efficiency	To monitor and evaluate employee productivity	Identifies high-performing employees, improves employee accountability, and enhances overall employee productivity
Visitor Management	To keep a track of the outsiders or visitors to the office	Improves security and controls unauthorized access
Emergency Response	To detect and respond to emergencies quickly	Improves emergency response times, and ensures safety

Energy Efficiency	To optimize lighting and energy use	Reduces energy costs, improves environmental sustainability, and enhances operational efficiency
Occupancy	To provide real-time office occupancy status	Identify empty seats and plan office space better

Source: Frost & Sullivan

Infrastructure

Smart City Mission: For decades, Indian cities have struggled to provide essential services and cope with rapid population growth. Recognizing the need for improved infrastructure, especially in burgeoning cities, the Indian government launched the Smart City Mission in 2015. This initiative aims to enhance urban living standards by delivering core infrastructure services and promoting a better quality of life. Currently, there are plans for 100 smart cities, with projects being either completed or in progress. These projects cover various aspects such as integrated command and control centers, smart mobility, energy, water supply, sanitation, public spaces, economic and social infrastructure, and smart governance. Within this framework, advanced surveillance technologies, including CCTV networks, are increasingly employed to bolster urban security. These systems utilize sensors, cameras, facial recognition, and AI-powered analytics to gather real-time data on traffic, public spaces, and potential security threats, providing security authorities with 24/7 monitoring and rapid response capabilities. Here are some of the CCTV camera deployments made or planned in few of the Smart Cities in India:

- Uttar Pradesh deployed a network of 1,00,000 CCTV cameras as part of the SCM
- Nashik deployed over 800 CCTV cameras to monitor 300 areas in the city
- Agra Smart City to deploy 1,200 CCTV cameras (Bharat Electronics Ltd. is the master system integrator)
- Bareilly deployed CCTV cameras at 140 identified locations
- Bilaspur to deploy more than 500 cameras
- Chandigarh deployed 907 fixed cameras and 133 PTZ cameras at 277 locations, additional 60 (360 degree) cameras installed on the rotaries of major traffic junction
- Dahod installed 350+ fixed and PTZ cameras at 100+ strategic locations in the city
- Jaipur installed more than 180 cameras as part of the SCM project
- Karimnagar would have 335 CCTV cameras, 85 red-light violation cameras, 85 vehicle detection cameras, 174 automatic number plate recognition cameras
- Kota installed 400 CCTV cameras
- Nagpur equipped with 3,688 CCTV cameras at 700 city junctions
- Rourkela to have 450 CCTV cameras
- Udaipur installed 348 high resolution cameras

Transportation: The usage of CCTV in transportation is extremely important, not only for ensuring passenger safety and security but also for enabling efficient monitoring and proactive incident response. The government has made significant strides in strengthening transportation security by deploying CCTV surveillance in public transport, especially in Delhi. After the Nirbhaya incident, the government allocated a budget of 140 crores to install CCTV cameras in over 200 DTC buses. These

state-of-the-art surveillance systems come with GPS, 3G/4G, and Wi-Fi capabilities, allowing for live tracking and high-resolution video output. These measures are especially crucial for guaranteeing public safety, where new regulations mandate public transport vehicles with more than 23 seats to have CCTV cameras linked to GPS and GPRS, alongside panic buttons for emergencies. These cameras are continuously monitored by local police control rooms, underscoring the government's commitment to passenger safety, particularly for women.

Parallelly, the Indian Railways has taken a significant step by experimenting with the installation of CCTV cameras to enhance security within train compartments. It includes deployment of facial recognition-enabled CCTV cameras in train coaches. Earlier in 2024, the Centre for Railway Information Systems (CRIS) floated a tender for the installation of 3.3 lakh facial recognition-enabled CCTV cameras inside 44,038 train coaches across India. The CCTV surveillance systems will incorporate video analytics and facial recognition technology, along with 4 cameras at exit/entry points of the train. These systems aim to bolster security by identifying faces of passengers, and storing facial data in real time, ensuring commuter safety and security throughout rail transport.

Smart traffic: Video surveillance and CCTV systems are pivotal in smart traffic management. The main issues faced in tackling road safety include traffic congestion, accidents, peak-hour crowding, difficulties faced by pedestrians, parking difficulties and inadequate transportation during off-peak hours. It leverages advanced AI technology to enhance efficiency and safety on urban roads. By placing high-definition CCTV cameras throughout city streets and highways, real-time monitoring of traffic patterns is made possible, which enables authorities to identify congestion hotspots and bottlenecks with precision. These video surveillance systems not only dynamically adjust traffic signals to optimize flow but also provide critical data that supports alternative route recommendations for drivers. In addition to detecting and penalizing traffic violations automatically, they contribute significantly to public safety by identifying areas prone to accidents and ensuring prompt responses to emergencies. This integrated approach aids in reducing travel times and improves the efficiency of public transportation and maintains road infrastructure by alerting authorities to issues such as potholes or other hazards.

Health, safety, and environment

While providing tangible benefits to most industry verticals, video surveillance also plays an important role in enhancing and ensuring health, safety, and environmental (HSE) standards. Using Visual AI paired with CCTV cameras, organisations can automate detection, measurement, and addressal of unsafe acts in operating and working environments. With the power of computer vision and visual AI technologies, HSE supervisors can proactively identify and prevent unsafe acts to create a system of safe working structure. Real-time detection is possible for Personal Protective Equipment (PPE) violations, persons in distress, trip hazards, near misses, and more. These solutions not only help provide safety but also helps realize cost savings by minimizing lost work time due to accidents. Role-based alerts can be made to notify designated personnel in real-time via apps, email, text, or on-site alarm system. The AI based camera systems overcome traditional methods employed by HSE personnel to monitor safety and environment by replacing manual processes with AI-enabled automation, data-driven insights, comprehensive coverage, and scalability. Notably, these solutions can be used to a broad range of industry verticals from warehouses to manufacturing, construction and chemicals.

Another area within HSE where Visual AI linked CCTV cameras can be used is the fire and safety industry. Although CCTV cameras are primarily seen as security systems, it can also be used as modern fire safety systems. AI enabled CCTV cameras can quickly detect and pinpoint the location of fire as soon as they start and raise alarms. Its efficiency is considered to be much higher than legacy fire detection systems. Traditional fire sensors depend on heat and smoke to identify fire. By the time the fire is detected, and alarms raised, fire would have spread across a wider space making it difficult to control. Visual AI solutions enable CCTV cameras transform into proactive analytical assets that provide actionable insights and automated alerts to better manage risk. Using machine learning (ML) models to images, the computer vision allows HSE personnel to keep an eye on the operations 24x7 to accurately identify and classify objects and decide the action plan based on what the camera sees. Additionally, the insights driven camera feeds also act as evidence during audit processes.

Residential

Video surveillance in residential settings extends beyond basic security, as it offers thorough coverage to ensure the safety and well-being of residents. Apart from the common areas like entry points, parking lots, community hall and shared spaces, cameras are strategically placed in hallways and near staircases to enhance security measures. The placement of cameras in these locations serves to ensure the safety of residents by monitoring movements, detecting any unusual activities, and preventing potential accidents or unauthorized access. These cameras not only deter trespassers but also help in observing the flow of individuals within the building, aiding in quick response to emergencies like falls, intrusions, or unauthorized individuals trying to access restricted areas. By monitoring these areas with a lot of people moving around, residents can feel more secure and better prepared for any unexpected events.

With the advancement of technology and increased affordability of CCTV cameras, video surveillance systems are also being used inside homes. Homeowners use security cameras to view live footage or recorded video from their cameras on their smartphones or other devices, even when they are away from their residence. These cameras come with night vision capability, motion detection and two-way audio, critical for preventing theft or burglary within homes. Mentioned below are some of the use-cases of video analytics in the residential and consumer segment:

- Perimeter monitoring and intrusion detection
- Access control through automatic number plate recognition
- Remote monitoring
- Suspicious behaviour detection
- People counting
- Occupancy monitoring
- Energy management

Law enforcement

The implementation of CCTV cameras in law enforcement areas like police stations aims to enhance monitoring by providing continuous visual surveillance at key locations in the facility. This serves to promote transparency and accountability as actions and movements are diligently recorded and easily accessible. Cameras are installed at all entry and exit points, including the main gate of the police station, and also in the lock-up areas, corridors, lobbies, and reception spaces to cover every essential

aspect of police station operations. Night vision capability, audio and video recording features, and extended data storage are necessary components of the CCTV systems to ensure thorough monitoring and security. This is in-line with the December 2020 directive of the Supreme Court of India to install CCTV cameras in all police stations and offices of investigative agencies like the Central Bureau of Investigation (CBI), the Directorate of Enforcement (ED), and the National Investigation Agency (NIA). Interrogations are to be made under the monitoring of their activities through visual surveillance and CCTV.

Key challenges include recording interactions with the public, capturing and identifying offenders, ensuring accountability of both officers and citizens, gathering tamper-proof video evidence from crime scenes, deterring potential violators and coordinating rapid response teams during live situations.

Also, the Supreme Court has emphasized the installation of CCTV cameras in courts and tribunal premises. This move is intended solely for security reasons, ensuring safety, and building a disciplined environment within the courtroom. The purpose of these cameras extends to addressing concerns about safety and judicial administration, putting a strong emphasis on trust, accountability, and public interest.

Events security

Cameras play a crucial role in ensuring the safety and security of large events with significant public participation. Whether it's the Kumbh Mela, Ganga Sagar Mela, the Ayodhya Ram Temple inauguration, or the high-profile G20 Summit in India, the strategic installation and use of surveillance cameras demonstrate a proactive approach towards maintaining order and ensuring the well-being of attendees. The magnitude and complexity of events like the Maha Kumbh demands advanced surveillance systems to monitor expansive areas. For instance, in the case of the upcoming 2025 Maha Kumbh, the state government has taken the initiative to install state-of-the-art equipment encompassing a network of CCTV cameras, controlled by the Integrated Command and Control Centre (ICCC), to vigilantly oversee the vast Sangam area. The surveillance system will not only monitor crowd movement but also manage lost and found centers, crowd management, parking sites, and ensure the overall safety and security of the event. Even in 2021, the use of CCTV cameras at the Kumbh Mela in Haridwar had an additional significance. Over 350 CCTV cameras, equipped with Artificial Intelligence (AI) technology, were strategically placed to identify people. These cameras had the capability to generate alerts for higher crowd density, identify unattended objects, and maintain a count of vehicles, allowing for proactive management of potential health and security issues. In a similar vein, Ganga Sagar Mela in 2021 witnessed extensive coverage under the watchful eyes of 1,150 CCTV cameras deployed throughout the mela province, along with the utilization of drones to ensure seamless monitoring and maintain the pilgrims' safety. Even the recent historic event of the Ayodhya Ram Temple inauguration saw the installation of 10,000 CCTV cameras, including those integrated with AI technology, indicating the extensive measures taken by the Uttar Pradesh police to bolster security and surveillance. Tirupati, another important Hindu temple in South India has approx. 3,000 CCTV cameras to enhance security and manage the flow of devotees effectively. Likewise, during the G20 Summit, Delhi ramped up security measures by connecting 1,443 new CCTV cameras to a centralized control room. This ensured comprehensive monitoring of movement and security across the city, underscoring the indispensable role of surveillance technology in managing such high-profile events. In the Maha Kumbh Mela of 2025, the government installed over 2,700 AI-powered CCTV

cameras to monitor public movement. In essence, the strategic incorporation of CCTV cameras for events such as religious congregations, temple inaugurations, and international summits serves as a proactive measure to safeguard public safety, maintain order, and enhance overall security.

4.9. Government support on manufacturing of electronic products in India

The Indian government has shown its commitment to supporting the manufacturing of electronic products through a range of schemes and initiatives. Some of the key initiatives include the Production Linked Incentive (PLI) scheme, the Modified Electronics Manufacturing Clusters Scheme (EMC 2.0), the Indian Semiconductor Mission, and Standardisation Testing and Quality Certification (STQC). The state governments have also rolled out initiatives like the one known as the Andhra Pradesh Industrial Infrastructure Corporation (APIIC) scheme. These initiatives aim to strengthen local manufacturing, attract investments, and improve India's electronics industry. The government's support in this sector is crucial for stimulating economic growth, fostering innovation, creating job opportunities, and positioning India as a hub for electronics manufacturing on the global stage. By supporting local factories, upgrading technology, and offering rewards, these initiatives pave the way for a brighter and competitive future for the electronics industry.

The 'Make in India' initiative aims to encourage innovation companies to manufacture products within India, boosting the local economy and creating job opportunities. It focuses on promoting self-reliance and developing indigenous capabilities in the video surveillance industry.

Production Linked Incentive (PLI) scheme for large scale electronics manufacturing

The Production Linked Incentive (PLI) Scheme, a significant initiative announced in the Union Budget of 2021-22, aims to bolster local manufacturing across 14 key sectors in India. With an outlay of INR 1.97 Lakh Crores, the scheme is geared towards stimulating the growth of domestic manufacturing and creating employment opportunities for the country's youth. The government's strategy encompasses the promotion of self-reliance and innovation, with a particular focus on boosting the manufacturing of core components in various sectors such as automotive, battery, and large-scale electronics. The scheme has been designed to address the challenges faced by domestic electronics hardware manufacturing in India. These challenges include inadequate infrastructure, limited supply chain and logistics, high finance costs, power supply issues, limited design capabilities, and insufficient focus on research and development. In response to these challenges, the National Policy on Electronics 2019 (NPE 2019) seeks to position India as a global hub for Electronics System Design and Manufacturing (ESDM), enhancing the nation's capabilities to create core components and fostering an environment that enables the industry to compete on a global scale.

The PLI scheme can significantly benefit the video surveillance and CCTV industry by incentivizing the domestic manufacturing of surveillance equipment, cameras, and related components. With the incentives offered for increased production, companies in the CCTV industry can use the incentives to invest in state-of-the-art technologies, improve their production facilities, and create cost effective and high-quality surveillance solutions. This investment can lead to the development of cutting-edge surveillance products and technologies, positioning India as a major manufacturer in the global CCTV and video surveillance market. This could contribute to the growth of the CCTV industry within India and the country's self-sufficiency in electronic manufacturing.

New PLI scheme for electronic components

Background and Rationale:

In March 2025, the Union Cabinet approved a landmark INR. 22,919 crore ($2.68 billion) PLI scheme to boost domestic manufacturing of electronic components, including both passive and active components, sub-assemblies, and capital equipment. This scheme is designed to replace the expired SPECS (Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors) and complements existing PLI programs for electronics manufacturing.

Key Features and Rules:

Scope: The scheme covers a wide range of components, including:

- Passive components (resistors, capacitors, inductors, transformers)
- Printed Circuit Boards (PCBs), SMD passives
- Sub-assemblies (display modules, camera modules)
- Lithium-ion cells
- Equipment and sub-assemblies used in electronics manufacturing

Tenure: The scheme will run for six years (FY 2025-26 to FY 2031-32)

Incentives:

- Structured as a mix of turnover-linked and capital expenditure-linked incentives.
- 25% capital subsidy for eligible capital expenditure in manufacturing infrastructure.
- Production-based incentives, with some reports indicating up to 28% of production value over five years.

Targets and Expected Impact:

- The scheme aims to increase domestic value addition to 35–40%, a substantial jump from previous levels (historically 15–20%).
- Expected to attract INR 59,350 crore ($6.94 billion) in investments and projected to generate production worth INR 4.56 lakh crore ($53.33 billion).
- Anticipated to create 91,600 direct jobs and many more indirect opportunities as the ecosystem expands.
- The electronics manufacturing industry is targeted to reach $ 300 billion in annual revenues by FY 2025-26, up from over $100 billion in FY 2024-25.

Strategic Analysis of PLI Scheme's Benefits for CCTV Manufacturers

- **Local Sourcing of Key Components:** The 2025 PLI scheme, with an INR. 22,919 crores outlay now covers passive components (resistors, capacitors, inductors), PCBs, camera modules, and sub-assemblies—all core elements in CCTV cameras. This directly addresses the historic dependence on imports, especially from China, for these parts.
- **Higher Value Addition:** The scheme aims to boost value addition in electronics manufacturing to 35–40%. For CCTV makers, this means more of the product's value is created domestically, improving margins and reducing the "assembly-only" model's vulnerability.
- **Innovation Incentives:** The PLI's support for capital equipment and R&D encourages CCTV manufacturers to develop advanced, cyber-secure, and AI-enabled products tailored to Indian needs

- **Market Expansion:** India's CCTV market is projected to double by 2030, with millions of cameras deployed in public and private sectors. Local manufacturing, supported by the PLI, enables firms to scale up quickly to meet this demand.
- **Resilience to Policy Changes:** Recent regulations require source code and hardware scrutiny for all CCTV imports, disproportionately impacting foreign brands, which import or only assemble CCTV cameras in India. Domestic manufacturers leveraging PLI incentives are less exposed to such regulatory risks and supply disruptions.

Modified Electronics Manufacturing Clusters (EMC 2.0)

The Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme is a solution to the problems faced by the electronic manufacturing industry in India. With a notable surge in the demand for electronic goods, the industry faces constraints due to insufficient infrastructure which leads to lack of investment. To address this, the Government of India introduced the EMC Scheme to attract more investments in electronic manufacturing. The scheme aims to provide financial support for setting up Electronics Manufacturing Clusters (EMCs), which will help create more manufacturing units and draw investments into the Electronics System Design and Manufacturing (ESDM) sector, boosting the industry's growth. Under the EMC 2.0 initiative, there are financial incentives available to support the development of high-quality infrastructure, common facilities, and amenities aimed at electronics manufacturers. The scheme offers up to INR. 3,762 Crore in financial incentives for this purpose. These electronics manufacturing clusters are expected to draw an investment of approximately INR. 209.10 billion and have the capacity to create 51,520 jobs once they are operational.

The EMC 2.0 Scheme's support for Greenfield and Brownfield EMC projects can also benefit the CCTV and surveillance industry in India. By providing funding for the development of essential infrastructure and amenities, such as boundary walls, internal roads, and services like backup power plants and waste disposal units, the scheme creates a conducive environment for the establishment of modern surveillance manufacturing units. This support can enhance the capabilities of CCTV and surveillance projects by ensuring access to reliable infrastructure and essential services, ultimately leading to the advancement of surveillance technology and the growth of the industry in the country. The scheme's emphasis on strengthening the electronics manufacturing sector and providing essential services for manufacturing units can directly benefit the CCTV manufacturing industry.

India Semiconductor Mission

The India Semiconductor Mission (ISM) was launched in 2021 with the overarching goal of developing a sustainable semiconductor and display ecosystem within the country, propelling India's emergence as a global hub for electronics manufacturing and design. Under the purview of the Ministry of Electronics and IT, the program boasts a substantial financial outlay of Rs76,000 crore. This visionary mission endeavors to galvanize the growth of India's semiconductor design industry, nurturing early-stage startups with essential support such as Electronic Design Automation (EDA) tools and facilitating indigenous Intellectual Property (IP) generation. ISM aims to spearhead collaborative research, foster commercialization, and drive skill development through partnerships with national and international agencies, industries, and institutions.

The Andhra Pradesh Industrial Infrastructure Corporation (APIIC) scheme

Also known as APIIC, the Andhra Pradesh Industrial Infrastructure Corporation scheme refers to a set of initiatives and programs taken up by APIIC (a government of Andhra Pradesh undertaking) to develop and promote industrial growth in the state of Andhra Pradesh by providing world-class infrastructure. The body (APIIC) with an objective to develop industrial parks and clusters, identifies, acquires, and develops land for industrial use, creating industrial parks, special economic zones, and industrial development areas complemented with essential arrangements like roads, power, water supply, and internal layouts. The corporation also provide plots at subsidized rates to MSME (medium, small, and medium enterprises) and offers plug-and-play infrastructure (ready-built factory spaces) to attract fast-moving industries. One of the companies known as AIL Dixon Technologies Private Limited (an important player in the electronic manufacturing services space in India), has been allotted industrial sheds and land at the Electronic Manufacturing Cluster (EMC) in Kopparthi, Kadapa district, and at EMC-II in Vikruthamala Village, Yerpedu Mandal, Tirupati district. The company manufactures various electronic products like CCTV cameras, IP cameras, DVRs and other security related products from these locations.

4.10. Mandatory STQC certification for CCTV cameras in India

STQC Certification and its importance to CCTV cameras and video surveillance components

Standardization Testing and Quality Certification Directorate ("**STQCD**", and such certifications, "**STQC**") plays a vital role in shaping the quality and competitiveness of India's IT and Electronics industry. It was established under the Ministry of Electronics and Information Technology in 1980. STQCD is dedicated to ensuring that products and services maintain high standards in accordance with international benchmarks. The organisation delivers a wide range of services, including testing, calibration, and certification, and holds recognition from both national and international accreditation bodies, such as Raad voor Accreditatie (RvA), IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE), International Electrotechnical Commission Quality (IECQ), National Accreditation Board for Testing and Calibration Laboratories (NABL), and Quality Council of India (QCI). This recognition underscores the organisation's commitment to maintaining industry standards and ensuring the quality and security of electronic and IT products and services.

To ensure the safety and quality of video surveillance products, the Ministry of Electronics and Information Technology (MeitY) has mandated that all CCTV cameras sold in India after April 9, 2025 should be STQC certified. The regulatory intent is to ensure that the CCTV cameras used are trustworthy, of good quality, and protect the user's privacy. Some of the broader reasons for the mandatory certification includes:

- Ensure that all CCTV cameras deployed in the country are free from any national security concern
- Guarantee that all major components used in CCTV and video surveillance are sourced from reliable and trusted manufactures
- Ensure that CCTV cameras work well and last long, and hence trustable
- Keep buyers safe from buying CCTV cameras that are either fake or does not work as expected
- Ensure that high-quality cameras can keep places secure and prevent crimes
- Align with the government's effort to control and regulate the CCTV cameras to protect individual privacy issue

In a notification released by MeitY on 6th March 2024, it was mentioned that the following camera types and components should undergo STQC certification:

- Analog-based CCTV Cameras
- IP-based CCTV Cameras
- Analogue speed dome-type CCTV Cameras
- IP speed dome-type CCTV Cameras
- DVRs/NVRs

MeitY's amendments to Comprehensive Regulatory Order (CRO)

On 9th April 2024, MeitY issued an important notification enforcing Phase 7 amendments under the Comprehensive Regulatory Order (CRO) of 2021 for CCTV camera. As per the notification, CCTV cameras need to be tested for essential security parameters. The major highlights of the amendment include:

- CCTV cameras need to mandatorily meet essential requirements (ER) as mentioned in Annex A of IS 13252-1
- All CCTV camera products need to get tested from a BIS-recognized laboratory which will be a pre-requisite for obtaining a license to use Standard Mark for the product
- The requirement as mentioned above would come into effect 6 months after the issue of the notification i.e. 9th October 2024

Bureau of Indian Standards issues Standard Deferment Notice to comply with mandate

The Bureau of Indian Standards (BIS) has implemented a mandatory STQC certification for all CCTV products, with a deadline of April 9, 2025, for compliance with Essential Requirements. The Government of India established a comprehensive regulatory framework that requires all internet-connected CCTV devices sold in the country—regardless of their origin—to obtain cybersecurity certification from government-approved laboratories by April 9, 2025. This initiative, spearheaded by MeitY and enforced by BIS, is designed to address the risks of foreign surveillance. Under these regulations, manufacturers must comply with stringent protocols, including hardware and firmware testing, source code audits, inspections of both domestic and overseas factories, as well as validation of tamper-proof enclosures and encryption. These steps are necessary to secure the mandatory STQC certification for their products.

The primary impetus for this regulation is the growing concern over cybersecurity threats posed by low-cost, uncertified CCTV cameras. Many of these devices lack basic security features, making them vulnerable to hacking, data breaches, and espionage.

The Government of India has introduced a comprehensive regulatory framework mandating cybersecurity certifications from Government-approved laboratories for all internet-connected CCTV devices sold in India, regardless of their country of origin, with an effective deadline of April 9, 2025. This initiative, led by the MeitY and enforced by the BIS, is aimed at mitigating risks associated with foreign surveillance. Under this framework, manufacturers are required to undergo rigorous compliance protocols, including hardware and firmware testing; source code audits; factory inspections, including overseas facilities; and tamper-proof enclosures and encryption validation, to obtain the mandatory STQC certification for their products.

Essential Requirements (ERs) for CCTV cameras[15]

It is required that CCTV cameras (Analog/IP/Analog Speed Dome/IP Speed Dome) to comply with the Essential Requirements (ERs) for security prescribed by MeitY to ensure the security of the video surveillance system and CCTV systems. The testing report would be issued by the STQC lab with the validity of the report upto three years. The requirements for video surveillance systems and CCTV cover:

Hardware-Level Security:

- **Debugging Interfaces:** Application layer debugging interfaces like USB and UART, as well as on-chip debugging interfaces like JTAG or SWD, must be disabled or protected by a complex password in production devices.
- **Trusted Execution Environment (TEE):** The presence and proper implementation of a TEE, Secure Element (SE), or Trusted Platform Module (TPM) for secure execution of sensitive processes is verified.
- **Secure Storage:** Sensitive data, private keys, and certificates must be stored securely within a Secure Element, TPM, or TEE, or protected by strong cryptography.
- **Tamper Resistance:** The device must have measures to prevent both software and hardware tampering.
- **Intellectual Property Protection:** Any chip-level intellectual property protection technologies must be enabled.

Software and Firmware Security:

- **Secure Boot:** The device must validate the signature of the boot image before loading to ensure it hasn't been tampered with.
- **Secure Firmware Updates:** The firmware update process must be secure, using code signing to validate updates and preventing downgrades to older, potentially vulnerable versions (anti-rollback). Automatic and manual secure update mechanisms are assessed.
- **Memory Protection:** The use of memory protection controls like Address Space Layout Randomization (ASLR) and Data Execution Prevention (DEP) is verified.
- **Secure Communication:** The device must use strong encryption algorithms and secure TLS versions to protect data in transit. The server's TLS certificate must be properly validated.
- **Vulnerability Management:** Use of banned C functions is checked, and the firmware is reviewed for hardcoded credentials (backdoors). The process for identifying and patching vulnerabilities in third-party components is also evaluated.

Supply Chain and Development Practices:

- **Secure Development:** The entire product development lifecycle, from design to retirement, is expected to follow secure engineering processes.
- **Supply Chain Security:** OEMs must demonstrate that they use trusted sources for critical hardware components and have a process for supply chain risk identification, assessment, and mitigation.

[15]Procedure for CCTV Testing Evaluation and Certification, STQC Directorate, Ministry of Electronics & Information Technology (MeitY), 21-05-2024
IoTSCS-P01-Procedure-for-CCTV-Testing-Evaluation-and-Certification.pdf

- **Conformance at Development Stage:** Design and architecture details must be provided to aid in counterfeit mitigation and malware detection. Threat mitigation strategies for tainted and counterfeit products are also required.

The tests need to be carried out under several categories like hardware level security parameter (supported by software), software/firmware, secure process conformance, and security conformance at the product development stage.

Aditya Infotech owned CP Plus has received STQC certification for some of its product lines and has begun supplying STQC certified products in the market. Sparsh CCTV has the distinction of being the first video surveillance company worldwide to attain STQC certification for its complete product line.

Current Market Landscape: A Drastic Reshuffle

The April 9, 2025 deadline has created an immediate and dramatic market concentration. As of June 2025, only a handful of manufacturers, predominantly Indian, have successfully navigated the stringent certification process.

Certified Players: The list of compliant companies is short, featuring names like Samriddhi Automation (Sparsh), Matrix Comsec, Prama India and Aditya Infotech (CP PLUS). Notably absent from this list are major global brands, including those from China, South Korea, and the US, that previously held significant market share.

The Component Ecosystem: The regulations have effectively created a "whitelist" for critical components. This is because, for an STQC lab to truly verify compliance with the secure boot and hardware security requirements, it would need:

Access to the System on Chip's (SOC) Design Schematics: To confirm there are no undocumented hardware blocks or potential backdoors.

Access to the Bootloader Source Code: To audit the very first piece of code that runs on the chip and establishes the chain of trust.

Full Cooperation from the System on Chip Designer: To understand how the cryptographic keys for secure boot are fused into the hardware and managed

Currently, the System on Chips (SOCs) likely to be compliant of new regulations are limited to those from Ambarella (U.S.), Novatek (Taiwan), and Innofusion (Singapore). However, a complex reality persists, as many other non-critical components in the certified "Indian" cameras still originate from China.

Short-Term Perspective: An Indian Advantage

The STQC mandate would give Indian OEMs which manufacture CCTV products locally a short-term advantage (since their products could easily be STQC compliant), enabling them to capture market share held previously held by imports. The following are the short-term impacts:

- **First-Mover Advantage:** Certified Indian brands like Sparsh and CP PLUS have gained a significant and immediate market advantage, positioning themselves as immediate legal suppliers of IP cameras.

- **Exclusive Access to Government Contracts:** The Public Procurement Order (PPO) has mandated STQC certification since June 2024, giving certified Indian brands exclusive access to lucrative government projects in critical sectors like railways, smart cities, and defense.
- **Barriers for Foreign Brands:** The combination of high costs, lengthy certification timelines, and the need for significant supply chain restructuring has effectively sidelined foreign competitors.

Long-Term Perspective: The Global Players Adapt

While the short-term impact of STQC guidelines favor Indian manufacturers, India's CCTV market is too significant for global players to abandon. These companies possess vast R&D resources, global supply chain leverage, and the financial muscle to eventually adapt to the new regulations. The challenge for Indian manufacturers will be to use this window of opportunity to build genuine technological capabilities and innovate. Their current dependence on a limited pool of approved foreign chipsets could become a bottleneck, creating supply constraints and price pressures. Once foreign brands achieve certification, the competitive landscape will likely shift again. Global players may focus on the premium segment, where their brand equity is strong, while increased competition could lead to price wars in the mid-range and budget segments. Honeywell, for example, has already launched its portfolio of Made in India CCTV cameras, fully designed and produced in India[16]. Nevertheless, it is expected local made/non-branded foreign players would cease to operate in the Indian market.

Industry-Wide Challenges and Disruptions

The abrupt and stringent nature of the mandate has sent shockwaves through the industry, creating significant hurdles for manufacturers and the broader ecosystem. The following are the possible short-term shocks arising from the supply side:

Impact on MSMEs: Industry associations have raised serious concerns, warning that over 1,000 Micro, Small, and Medium Enterprises (MSMEs) in the CCTV sector are at risk of closure. The high cost of certification and the inability to quickly re-engineer products and supply chains could disproportionately affect these smaller players, potentially impacting up to 400,000 jobs[17].

Market Disruption and Price Hikes: The policy has impacted over 80% of the products in India's surveillance market. With a limited supply of certified cameras, the immediate consequence is likely to be a price increase for consumers, estimated to be between 10-30%.[17]

Risk of a Grey Market: Several industry experts have warned that the high costs and stringent requirements could inadvertently fuel a black market for uncertified and illegally imported cameras, which would undermine the very security objectives the policy aims to achieve.

4.11. India's initiative to move away from China/import

India's trade relationship with China has been significant, with a bilateral trade worth $127.65 billion in the fiscal year 2024-2025[18]. India's imports from China totaled $113.4 billion, but India's exports

[16] Honeywell India, 4th June 2025, Honeywell Launches Its First-Ever CCTV Camera Portfolio Made in India
[17] Security Update Magazine, 22nd April 2025, STQC Certification Requirement Order Monopolises The CCTV Industry in India | Security Update
[18] Press Release, PIB Delhi (data from Ministry of Commerce & Industry), 16th April 2025, Press Release:Press Information Bureau

have been relatively low ($14.25 billion) which resulted in a trade deficit of about $99 billion, accounting for over 35% of India's aggregate trade deficit. Sectors like chemicals, automotive components, pharmaceuticals, and consumer electronics have been most where products have been imported. This significant import dependency had raised concerns about India's self-reliance and trade balance, which sparked the need for import substitution policies. India's substitution policy aims to modify the economic structure of the country by substituting foreign goods with locally manufactured ones. Since 2017, the imports have decreased while the government takes more initiatives to increase their exports, which summarily reduces the trade deficit that has been the case over the years.

Notably, in the electronics industry, particularly in the video surveillance segment, India has witnessed a significant emphasis on domestic manufacturing as part of the "Make in India" initiative. Prominent companies like Hikvision Prama and Dahua Technology have established manufacturing units in Mumbai and Gurgaon, respectively, which signals a strategic push to enhance the capacity of video surveillance manufacturing within the country. These initiatives underscore the focus on promoting self-reliance and developing indigenous capabilities in the video surveillance industry. By encouraging the domestic production of video surveillance equipment, India's import substitution efforts aim to create a more self-reliant trade framework in this specific sector. The growth in the domestic manufacturing capacity would reduce dependency on imports, enhance the competitiveness of Indian industries, and create opportunities for export expansion.

In India, developing plastic and metal housings for security cameras and recorders presents opportunities, given the country's evolving manufacturing landscape, growing domestic demand, and the rise of global outsourcing.

Economic self-reliance initiatives

In alignment with the objectives of achieving economic self-reliance, India has introduced measures to promote domestic production across sectors and reduce dependency on imports. These measures come in the wake of strained relations between India and China following a deadly 2020 border clash, which led to a slowdown in approvals for Chinese investments and visas. This had resulted in prolonged delays in visa approvals for Chinese citizens, particularly impacting the electronics manufacturing sector in India. The delays in visa approvals have had severe implications, including production losses, financial setbacks, and employment challenges, while also leading to missed export opportunities, highlighting the economic implications of inefficiencies in the visa approval process. This prompted the Indian government to expedite the visa approval process for Chinese professionals, with a specific focus on those essential to domestic manufacturing units. The government aims to nurture specialized skills, enhance domestic production capacities, and minimize import reliance through streamlined visa application processes and the implementation of Standard Operating Procedures (SOPs) to facilitate the timely entry of essential foreign professionals. These efforts reflect a strategic shift towards self-reliance, as envisioned in the "Atmanirbhar Bharat" initiative, underlining the commitment to addressing the challenges posed by delayed visa approvals and supporting India's position as a prominent manufacturing hub

Supply Chain Resilience Initiative

The Supply Chain Resilience Initiative (SCRI), formally launched by the Trade Ministers of India, Japan, and Australia, is a concerted effort to fortify supply chains and strengthen economic resilience in the Indo-Pacific region. This initiative is specifically designed to diversify supply risks across multiple

countries, mitigating over-reliance on any single nation, particularly China. The SCRI aims to promote a robust, sustainable, and inclusive economic growth trajectory in the region. The SCRI holds special significance for India amidst strained relations with China and revealed vulnerabilities in supply chain during the Covid-19 pandemic. Partners such as Japan have recognized India's potential readiness to engage in discussions on alternate supply chains. Considering the existing reliance on China for crucial imports ranging from mobile phone components to pharmaceutical ingredients, India's cautious approach is aimed at gradually enhancing self-reliance and decreasing dependence on Chinese imports, ensuring the resilience of its economic supply networks.

Notably, this initiative serves as a platform for facilitating dialogue and collaboration among partner countries, with a primary objective to attract foreign direct investment and foster economic growth. It also aims to establish mutually beneficial relationships among the partnering nations and set the stage for diversifying supply chain networks. As India evolves its trade and economic policies to navigate its relationship with China and enhance its self-reliance, the SCRI offers a strategic avenue for dialogue on alternative supply chains and investment diversification. This aligns with India's objective to safeguard its interests and reduce dependence on Chinese imports, while gradually strengthening its domestic supply resilience over time.

Production Linked Incentive (PLI)

The Production Linked Incentive (PLI) program, introduced by the Indian government, aims to incentivize and enhance domestic manufacturing capabilities in key sectors such as electronics, IT hardware, and pharmaceuticals. By providing financial incentives based on specific production targets, the PLI scheme encourages companies to increase their manufacturing output, reduce reliance on imports, especially from China, and position India as a prominent global manufacturing destination. This initiative aligns with the larger vision of promoting self-reliance and reinforce the domestic manufacturing ecosystem.

4.12. Video Surveillance as a Service (VsaaS)

Video Surveillance as a Service or VSaaS is a cloud-based solution for managing video surveillance systems. Through this model, businesses and enterprises have the option to outsource video monitoring, storage, and management of the video footage to a service provider thereby eliminating the need for on-premise infrastructure. Organisations who plan to scale quickly often opt for the VSaaS model where cloud is used for video recording, storage, and surveillance. Notably, the VSaaS market in India is poised for high growth.

Value added service of surveillance

VSaaS refers to storage, accessing, and managing the company’s video surveillance footage on a cloud server. Partnering with a VSaaS vendor includes video recording, cloud-based video storage, remote management, and remote software update. Businesses benefit from the flexibility that VSaaS offers as most of the infrastructure is on the cloud and can be used from anywhere. While the camera endpoints are placed at the customer’s property, the video streams/data are sent to the provider for monitoring and reporting. With regular software updates and comprehensive access control, users get more power over their surveillance systems.

Benefits of VSaaS:

- **Less hardware on-site:** VSaaS eliminates the need for dedicated servers on-site as well as the need to maintain and upgrade them. Users only need IP cameras, while they can still backup video data locally to create a hybrid system if needed.
- **High on OPEX, low on CAPEX:** The on-premise video surveillance systems are CAPEX (capital expenditure) heavy which at times becomes a challenge for the customer (enterprise). On the contrary, VSaaS works on the OPEX (operational expenditure) model which has low upfront expense. In the business model, software hosting, and storage costs are billed monthly as operating costs which also includes services and support services.
- **The vendor maintains the software:** One among the biggest advantages that VSaaS offers over traditional on-premise video-surveillance model is the fact that the vendor manages all software maintenance, including security patches and upgrades. Users are able to access VSaaS via the cloud.
- **Easy to scale:** Businesses prefer solutions that are scalable. VSaaS is a highly scalable model that allow users to increase/decrease the number of installed cameras and pay only for the numbers of cameras installed, the resolutions, and the storage they use and not a set fee.
- **Cameras choices:** Users who have already made investments in cameras can still benefit from VSaaS. The cloud-based model support various cameras so that users can use existing hardware and maximize their video surveillance hardware investment. VSaaS makes it easier for the user to upgrade to high resolution and smart feature-based cameras while expanding the bandwidth and storage.
- **Connect from anywhere, anytime:** Cloud-based video surveillance allow users to monitor video in real-time from any smartphone or tablet (internet connected). Since VSaaS uses cloud servers, data is stored in the cloud while the user can still backup the data locally.
- **Real-time alters:** Unlike on-premise video surveillance systems, administrators can log-in from any location on their device, review video, change settings, and take action if necessary.
- **Better security:** Vendors offerings VSaaS prioritize security, staying alert to identify any threat and protect their systems, whether the video data is in transit or at rest. The level of security is considered higher than a usual on-premise setup where the customer manages the video surveillance system.
- **Advanced features:** VSaaS through open APIs allow users to integrate new applications. Video analytics coupled in with video data streams allow to monitor and analyze customer behaviour.

Monitoring and managing critical establishments with VSaaS

The benefits that VSaaS offers, especially with remote monitoring and management of video surveillance systems, positions itself as an attractive solution for surveillance over critical and sensitive industry verticals like BFSI, healthcare, and industrial. Mentioned below are some of the use-cases of VSaaS often noticed in critical establishments.

- **Banking and financial institutions:** The BFSI sector uses VSaaS to enhance security, prevent fraud, and optimize operations. VSaaS help security teams to remotely monitor their branches and ATM kiosks from any location over the web and through mobile application – 24x7, from anywhere. Leveraged with video analytics, the cameras can detect theft, prevent untoward incident and quickly respond to an emergency. VSaaS systems can be integrated with access control, alarm systems, and other security measures to create a unified ecosystem. The

solution can also analyze footfall pattern at ATM counters or branches and hence enable banks to optimize resources. Banks which often aim to reach every corner of the country, VSaaS helps them easily scale video surveillance capabilities without any major roadblock.

- **Healthcare:** VSaaS helps the healthcare industry by enabling them with patient safety, asset protection, and compliance with regulatory standards. Hospitals, diagnostic centers, and clinics are often the target for criminals due to the valuable assets that they deal with including patient data, medical equipments, and pharmaceuticals. 24x7 monitoring of critical and sensitive areas within the premise like intensive care units (ICU), medical storage rooms, pediatric units, etc., helps enhance security and protect healthcare professionals and patients alike. This is even more beneficial for healthcare establishments that have multiple healthcare facilities spread across various locations. Security teams can remotely access surveillance footage from anywhere for any of the facilities.
- **Industrial and manufacturing:** Industrial and manufacturing are one of the industry verticals where workers need to follow right safety protocols, else could be life threatening. VSaaS help authorities to monitor the movement of its workers to check if they are wearing proper safety gears to avoid an accident or fines due to non-adherence of regulatory mandates. Video surveillance is also used for increasing perimeter security across the large manufacturing setups.

  One of the benefits that VSaaS offers is integration. The cloud-based model could be integrated with other security measures, such as access control and alarm systems, creating a comprehensive security ecosystem. The integration allows unified management of all security operations, improving the overall security effectiveness and simplifying the monitoring process.

Annual Maintenance Contracts

Annual Maintenance Contract (AMC) is defined as an agreement between the manufacturer and the customer for maintenance and support of an asset for a certain period. In this report, AMC refers to a contract between a VSaaS provider and the customer that covers maintenance and support of video surveillance systems for a specific time period (usually 1-3 years). An AMC typically includes:

- Maintenance of the VSaaS equipment to keep it in working condition
- Quick turnaround on breakdown resolution and repair services
- Priority support in case of emergencies
- Discount on labor cost
- Monitoring and management of the VSaaS system by experts

Benefits of AMC for VSaaS:

- High up-time of the video surveillance system
- Reduced unplanned downtime and extended equipment life
- Better budgeting for maintenance expenses
- Up-to-date system with timely upgrades
- Compliance with manufacturer warranty requirements

4.13. Emerging camera segments

Based on the various needs, cameras across video surveillance are fast evolving and are experiencing rapid growth, driven by advancements in technology and the increasing demand for improved security and operational efficiency. Some of the cameras that have emerged in recent years include body cameras, dashboard cameras, and digital entry points. Each of these cameras comes with unique features and meant to address specific needs, offering extensive applications across industry verticals.

Body cameras

Body cameras, often worn by law enforcement officers and security personnel, are designed to capture real-time audio and video recordings of interactions and events from the user's perspective and it serves crucial purposes in the realm of law enforcement and public safety. Mostly, body cameras are employed in law enforcement to enhance transparency and accountability within communities. By providing a firsthand account of interactions, these devices can offer an unbiased perspective, thereby fostering trust and transparency between law enforcement and the public. Body cameras serve as an invaluable tool for providing evidence in investigations and legal proceedings, offering clear documentation of events and interactions, thus aiding in the resolution of disputes and ensuring fair pursuit of justice.

Body-worn cameras (BWCs) are increasingly being used to enhance transparency, accountability, and evidence gathering. Noida police allocated 507 body-worn cameras to all 26 police stations and the traffic department, aiming to improve transparency, accountability, and evidence-based policing. Each police station received at least four body-worn cameras. All 116 police response vehicles were also equipped with BWCs. In a similar effort, the Delhi Police sought to simplify procedures under the Bharatiya Nagarik Suraksha Sanhita (BNSS) by using body-worn video (BWV) cameras to address challenges faced during crime scene video recording. Officers found it challenging to manage phone recordings while handling incoming calls and uploading footage. Mobile phones at times also unsettle witnesses. The introduction of BWV cameras aimed to provide a seamless recording process and alleviate practical challenges faced by officers.

Dashboard cameras

Dashboard cameras, commonly known as dash cams, are mounted on vehicle dashboards to continuously record the view through the vehicle's front windscreen (and sometimes rear or other windows). They operate in a continuous recording mode while the vehicle is in motion, these devices capture the real-time view of the road and surroundings. The need for dash cams is evident in the array of features and functions they offer to drivers, making them indispensable tools for enhancing safety and security on the roads. Dash cams provide essential evidence in accidents, helping drivers prove fault and save on insurance costs, while also aiding law enforcement in investigations. The protection against fraudulent insurance claims and the monitoring of driver behavior through advanced sensors and tracking capabilities further highlight the importance of these devices. Additionally, dash cams offer parking security with features like parking mode and motion sensors to deter vandalism and theft. The potential for insurance discounts, the ability to capture memorable road trips, and the safeguarding against police misconduct underscore the diverse benefits and versatility of dash cams in modern-day driving scenarios. These features have made dash cams an essential component of vehicle safety and surveillance systems.

In 2024, dashboard cameras have undergone significant advancements, offering a range of features designed to enhance safety and security for drivers. One major improvement is the integration of high-

resolution recording capabilities, with cameras now offering up to 4K or 5K resolution for clear and detailed video footage. This enhancement allows for better visibility of important details such as license plates and road signs, crucial for recording critical events accurately. Cloud connectivity has emerged as a common feature in the latest dashboard cameras, allowing for seamless data storage, remote access to recordings, and easy sharing of footage. Moreover, the integration of dashboard cameras with Advanced Driver-Assistance Systems (ADAS) has become more prevalent, providing features like lane departure warnings, forward collision alerts, and adaptive cruise control to enhance overall vehicle safety and assist drivers in avoiding potential risks on the road. Wide Dynamic Range (WDR) technology has also been incorporated into modern dashboard cameras to optimize image quality by balancing exposure in high-contrast lighting conditions. This ensures that important details in both bright and dark areas of the video are captured clearly, improving overall recording quality. Some dashboard cameras also feature GPS capabilities for accurate location tracking and timestamping of recordings, providing essential context and evidence in the event of an incident or accident.

Digital entry point cameras

Digital entry point cameras refer to smart surveillance systems integrated with access controls such as biometric scanners, facial recognition, and other digital verification methods to secure physical entry points. These innovative systems provide heightened security measures, ensuring that only authorized individuals have access to restricted areas. By leveraging advanced surveillance and verification methods, they significantly enhance the safety and protection of physical spaces. These systems offer comprehensive data and insights about access patterns and behaviors, enabling informed decision-making and the implementation of targeted security measures to address specific needs. Overall, the adoption of digital entry point cameras represents a significant advancement in physical security and provides a multifaceted approach to access control and surveillance.

India has seen significant strides in the deployment of digital entry points, particularly within government buildings, corporate offices, educational institutions, and residential complexes in major cities such as Delhi, Mumbai, Bangalore, and Hyderabad. Embracing advanced technologies such as biometric scanners, facial recognition systems, and smart surveillance solutions, these establishments have aimed to enforce strict access control and real-time monitoring capabilities, revolutionizing security measures. The application of these systems in residential complexes has streamlined entry procedures, minimized security breaches, and ensured swift responses to potential threats, thereby enhancing safety and surveillance in these spaces.

One of the prominent use cases of digital entry point cameras integrated with biometric face scanning systems are Indian airports. The DigiYatra initiative implemented in Indian airports has been widely regarded as a positive and innovative move by the Government. The deployment of such systems has been instrumental in enhancing security measures and streamlining entry processes in a more efficient way for travelers. It is currently operational across 13 airports and has plans for nationwide expansion. DigiYatra has been lauded for its ability to automate passenger processing, reduce wait times, and expedite boarding procedures, ultimately making air travel more convenient and hassle-free. By leveraging facial recognition technology, DigiYatra has transformed the entry process into a contactless and paperless experience.

Beyond DigiYatra, advancements in facial recognition technology have also been observed in other aspects of security in the country. For instance, the Jammu and Kashmir Police has taken a significant

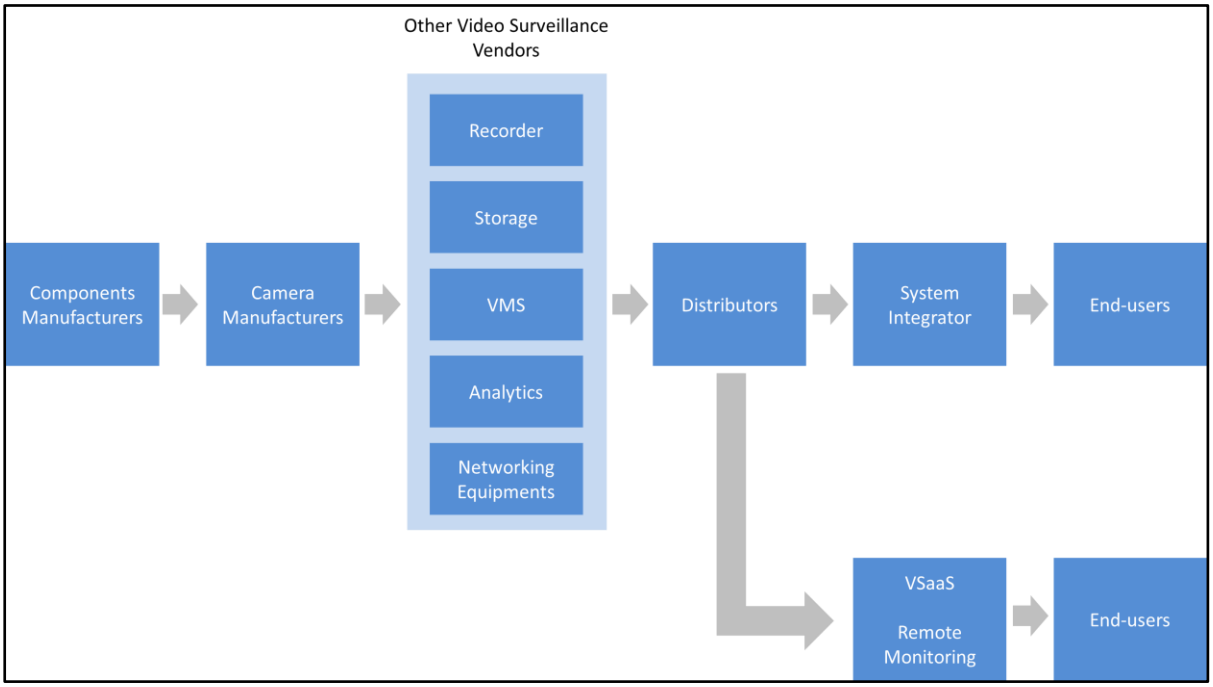
step by activating an AI-based facial recognition system in Ramban district. This advanced system, developed by a Chennai-based company, has been installed near a tunnel on the Jammu-Srinagar National Highway. It involves high-focus CCTV cameras integrated with a database containing images of militants, overground workers, and criminals. Impressively, these cameras can screen the faces of individuals inside vehicles and sound an alert to the police if a face matches a photograph, demonstrating the potential to enhance security measures. In another use case, to fortify security measure ahead of the G20 Summit in 2023, the Delhi Police had upgraded its AI-based facial recognition system, achieving an impressive accuracy rate of 90%. The system utilized data from both the intelligence agency's database and the Delhi Police's database, containing information on over 300,000 suspects, including criminals and terrorists. The police had considered the deployment of 1,000 facial recognition cameras to identify any suspect in the crowd, which provided a valuable tool for identifying suspicious individuals and ensuring comprehensive security at the summit.

5. Video Surveillance and Security Market Ecosystem

5.1. Value chain of the hardware market

In the video surveillance and security market ecosystem, there are multiple stakeholders in the value chain. This includes component manufacturers, camera manufacturers, vendors providing recorders, storage, video management software (VMS), video analytics and networking equipments, distributors, system integrators, and cloud video surveillance providers. Each of these stakeholders are critical members in the value chain, playing their part in delivering video surveillance and security to end-users.

Figure 31: Video surveillance ecosystem and value chain analysis



Source: Frost & Sullivan

- **Components manufacturers:** Raw material suppliers or component manufacturers are businesses that supply critical components like image sensors, camera lenses, modules, and other materials to camera manufacturers.
    - Image sensors provide the image capturing capability in cameras. These sensors commonly use CMOS or CCD sensor technology. Some of the leading vendors in the space include Sony, Samsung, Canon, Panasonic, OmniVision, etc.
    - Another critical component in cameras are camera lenses. These lenses determine the field of view, zoom, and image quality of cameras. Suppliers provide fixed focal length, varifocal, and motorized zoom lenses. Suppliers providing camera lenses include Tamron, Computar, Fujifilm, Kowa, etc.
    - Camera modules offer integrated assemblies containing sensor, lens, and support electronics. They provide a complete camera solution ready for integration into the final product. Leading players offering camera modules include Chicony, Altek, Lite-On, etc.
    - In addition to the aforementioned components, other camera parts include enclosures (protects camera from environmental elements and vandalism), power

supplies (provides necessary power to operate cameras and supporting equipment), and cables and connectors (used for connecting cameras to power and network infrastructure).

- **Camera manufacturers:** Camera OEMs or camera manufacturers are companies who assemble components from various camera parts manufacturers to shape the video surveillance camera. They are essential players who design, produce, and distribute a variety of surveillance cameras. Based on the requirement, CCTV camera manufacturers produce various types of cameras which include analog cameras, IP cameras, PTZ cameras, thermal cameras, etc. CP Plus, Prama Hikvision, Dahua, and Axis Communications are few of the leading camera manufacturers in India.
- **Other video surveillance component vendors:** Beyond CCTV cameras, other associated video surveillance components include recorders, storage devices, VMS, video analytics software, and networking devices. CCTV cameras do not work in isolation, rather work in tandem with the below mentioned components to offer video surveillance and security.
    - **Recorders:** Video recorders are typically of two types: NVRs and DVRs. NVRs are designed for IP camera systems that manage video streams over a network. They offer higher resolution and advanced features, such as remote access and cloud storage integration. On the contrary, DVRs are primarily meant for analog cameras. It converts analog video signals into digital format for storage. Most CCTV recorders support large storage options, often accommodating multiple terabytes of data through SATA HDDs.
    - **Storage:** CCTV storage is a critical component of video surveillance system meant for capturing and retaining video footage. CCTV vendors often partner with 3rd party storage vendors to increase the storage capacity. Seagate is one of the leading storage vendors.
    - **VMS:** A Video Management Software is a system that help users to automatically monitor events from multiple cameras, alarms, or sensors. The software works in conjunction with an external hardware to deliver the desired functionalities. A VMS captures video from connected cameras and stores it on cloud or on a cloud-based system. Axis Communications, Milestone Systems, Genetec, Avigilon, etc. are few of the most prominent global VMS players.
    - **Video analytics:** A modern video analytics software leverages AI and advanced algorithms to automatically analyze video content and provide meaningful information to the user. Some of the video analytics functions include real-time analysis, object detection and tracking, retail analytics, automatic number plate recognition. Some of the video analytics companies include Honeywell, Ambarella, Teledyne FLIR, Bosch Security Systems, etc.
- **Distributors:** OEMs/camera vendors do not sell video surveillance systems directly to the system-integrator or the end-users. Distributors procure a wide range of surveillance products including cameras, recorders, and accessories, from manufacturers and ensures that integrators and end-users have access to the latest technology and equipment. They also provide technical assistance and support to system integrators thereby helping them to understand product specifications, installation processes, and trouble shooting. In several cases distributors educate and train the integrators on the products and technologies to

ensure that they are well equipped to implement the surveillance system. Distributors take care of logistics and shipping of the product to the system integrator.

- **System integrators:** Integrators combine surveillance cameras with recording devices, recorders, encoders, VMS, analytics software, and networking devices to create the system for the end-customer. They are responsible for designing and installation of the complete video surveillance system for end-users. System Integrators (SIs) work closely with the customer to understand the specific need and provide the construct of the solution. They have the expertise in evaluating and selecting the best-fit video surveillance components from various manufacturers. Integrators work with the distributor to procure the hardware and software, complete the installation and integration process. SIs are also responsible for offering technical support to maintain the video surveillance system's optimal performance., troubleshoot issues, perform software updates, and provide training to end-customer system operator.
- **VSaaS provider:** Customers who do not wish to invest heavily and manage its video surveillance and security systems internally, look to opt for a VSaaS provider. A VSaaS provider offers cloud-storage, remote access and management, cost-effectiveness, automatic updates and maintenance – typically based on the OPEX model. Some of the cloud video surveillance or VSaaS suppliers include Johnson Controls, Eagle Eye Networks, ADT, Securitas, etc.

5.2. Leading players operating in India

The Indian video surveillance and security market is dominated by global players with no stock exchange listed Indian players. There are just a few Indian video surveillance and security players who are yet to go public. Listed below are some of the leading players operating in India.

5.2.1. Axis Communications

- **About:** Axis Communications is a prominent network technology company dedicated to enhancing security and business performance through innovative solutions. Axis has established itself as one of the leaders in video surveillance, access control, intercom, and audio systems. It has a workforce of approximately 4,000 employees spread across over 50 countries. Axis collaborates with technology and system integration partners globally to deliver customized security solutions. Their offerings cater to a diverse array of sectors such as retail, banking, transportation, and public spaces, enabling organisations to bolster security measures while simultaneously enhancing operational intelligence.
- **Founded:** 1984
- **Geographical presence:** Sweden (HQ),
- **Products, solutions and service Offerings:**
    - **Products (not an exhaustive list):** Network Cameras (Dome, Box, Bullet, PTZ, Modular, Panoramic, Thermal, Onboard, etc.), Access Control, Video Recorders, Video Encoders, Storage, Video Management Software
    - **Solutions by industry vertical (not an exhaustive list):** Banking and Finance, Education, Healthcare, Hospitality, Industrial, Traffic, Buildings, Public Transport, Maritime, Smart City, Data Center
- **Partner Ecosystem:**

- **Technology partners:** Aidant, Araani, BriefCam, CamStreamer, Citilog, Genetec, Hampen Technology, Irisity, Milestone, QNAP, Sunjin Infotech, Vaxtor Technologies, Waterview, Intellicence, Senstar Symphony
- **Channel partners:** NexGen Integrated Systems (India), Bangalore Datacom (India), Canon (India), Sigma Byte (India), Optonet (India), Unicom (India), Avtel (India), Aegis Automation (India), Securitas (Multi Regional), Honeywell (Multi Regional), Convergint (Multi Regional), G4S (Multi Regional), Johnson Controls (Multi Regional), Ingram Micro (Distributor – India), Inflow Technologies (Distributor – India), etc.

5.2.2. CP Plus

- **About:** CP PLUS is a division of Aditya Infotech Ltd, which is a well-established Indian player in the security and surveillance industry. It is the largest Indian-owned company offering video surveillance and security products, solutions and services with a market share of 20.8% of the Indian video surveillance market in terms of revenue in FY 2025. CP PLUS serves a wide range of customer segments. With manufacturing facilities located at Tirupati, CP PLUS states that 85% of its product line is made in India which aligns with the 'Make in India' initiative. In recognition of its rapid growth, CP PLUS has been ranked among the top video security and surveillance brands in Asia and one of India's leading security brands for several years. The company also has a tagline, "Uparwala Sab Dekh Raha Hai". The product portfolio of CP PLUS includes a wide variety of security technologies, including network and HD-analog cameras, digital video recorders (DVRs), network video recorders (NVRs), mobile surveillance solutions, body-worn cameras, thermal cameras, and temperature screening solutions. Some of the company's product lines are STQC certified, underling CP Plus's intend to meet high industry standards for surveillance system quality and reliability. The company provides integrated central command and control software, AI-based video analytics, access control systems, time-attendance solutions, and various accessories, catering to diverse market requirements across several sectors.
- **Founded:** 2007
- **Geographical presence:** India (HQ)
- **Products, solutions and service offerings:**
  - **Products (not an exhaustive list):** Network Camera, Analog Camera, Network Video Recorder (NVR), Digital Video Recorder (DVR), Storage, Video Decoder
  - **Solutions by industry vertical (not an exhaustive list):** Banking, Hospitality, Industrial, Traffic, Transport, Smart City, Retail, Buildings, Law Enforcement
- **Partner Ecosystem:**
  - **Technology partners:** Ambarella, Omnivision, Sony, Intel, Qualcomm, VVDN, CDAC, L&T Semiconductor Technologies, Dixon Technologies, Spark Cognition, etc.
  - **Channel partners:** Bright Computers, IR Focus, Kiran Electrosys, VASP Technologies, Aarti Computers, Flipkart, Appario, Total Securities, MBT Traders, Technocrat Infotech, Intratech Computers, etc.

5.2.3. Dahua

- **About:** Dahua Technology is a video-centric smart IoT solution and service provider, operating in 180 countries and regions. The company invests around 10% of its annual sales revenue in R&D which shows its commitment to technological innovation. With a strong focus on video

IoT technologies, Dahua Technology has expanded into machine vision, video conferencing systems, professional drones, smart fire safety, automobile technologies, smart storage, and robotics. The company's commitment to digital intelligence is demonstrated through its 'Dahua Think#' corporate strategy, which focuses on City and Enterprise sectors, aligning its technological strategies with customer needs. It has a workforce of over 22,000 employees, a significant portion dedicated to R&D, Dahua continues to explore new opportunities and invests heavily on innovative technologies. Dahua has dual emphasis on constant technological innovations and client support.

- **Founded:** 2001
- **Geographical presence:** China (HQ), Mexico, USA, Brazil, Chile, Columbia, Peru, Panama, UK, Poland, Hungary, Germany, Singapore, Malaysia, Australia, South Africa, UAE, Kazakhstan, India, etc.
- **Products, solutions and service offerings:**
    - **Products (not an exhaustive list):** Network Cameras, PTZ Cameras, HDCVI Cameras, Thermal Cameras, Network Recorders, Storage, Cloud Management Platform
    - **Solutions by Industry Vertical (not an exhaustive list):** Banking & Finance, Transportation, Critical Infrastructure, Building, Retail, Traffic
- **Partner Ecosystem:**
    - **Technology partners:** 3dEYE, Arteco, AxxonSoft, Bold, Eagle Eye Networks, Evercam, Mirasys, Prassel, Flame Analytics, Cloudview, Foxstream, etc.
    - **Channel partners:** CP Plus

5.2.4. Prama Hikvision

- **About:** Prama Hikvision India is a provider of video surveillance products and solutions. With its manufacturing facility located near Mumbai, the company produces a wide range of surveillance products. To enhance customer service, Prama Hikvision also has a network of 21 RMA centers throughout India, ensuring timely and efficient technical support. It delivers specialized security solutions tailored to various industry verticals. With a strong emphasis on innovation, Hikvision Prama focuses heavily on research and development, and strives to deliver top-notch products backed by responsive technical assistance.
- **Founded:** 2009
- **Geographical presence:** India (HQ)
- **Products, solutions and service offerings:**
    - **Products (not an exhaustive list):** Network Cameras, Analog Cameras, Thermal Cameras, Network Video Recorder, Digital Video Recorder, Hybrid Video Recorder, Encoder, Decoder
    - **Solutions by industry vertical (not an exhaustive list):** Banking & Finance, Hospitality, Industrial, Healthcare and Pharmaceuticals, Retail, Transport, Traffic
- **Partner Ecosystem:**
    - **Technology partners:** Avigilon, AxxonSoft, Texas Instruments, Hewlett-Packard, Seagate, Western Digital, Lenel Systems, Roger, etc.
    - **Channel partners:** GEM Infotech (India), and few others

5.2.5. Sparsh CCTV

- **About:** Established under name of Samriddhi Automations Pvt. Ltd., Sparsh CCTV a leading manufacturer of electronic video surveillance equipment in India, embodying the "Made in India" spirit. It has a product presence in over 10 countries and a robust network spanning more than 150 cities across India. The company operates three state-of-the-art manufacturing facilities, with an upcoming anchor unit in Kashipur poised to enhance its production capacity to 1 million units per month. Sparsh allocates approximately 8 percent of its annual revenue to research and development, supported by a recognized in-house R&D center that is among the largest in the Indian video surveillance industry. With more than 2,000 channel partners, 11 sales offices, and 13 service centers, Sparsh CCTV prioritizes accessibility and customer convenience, ensuring rapid and efficient service.
- **Founded:** 2002
- **Geographical presence:** India (HQ), and over 10 countries (sister concern in the US)
- **Products, solutions and service offerings:**
    - **Products (not an exhaustive list):** IP Cameras, PTZ Cameras, Analog Cameras, Network Video Recorder, Digital Video Recorder, Video Management Software, Storage
    - **Solutions by industry vertical (not an exhaustive list):** Banking, Education, Healthcare, Buildings, Smart City, Traffic, Retail, Transport, Law Enforcement, Defense
- **Partner Ecosystem:**
    - **Technology partners:** Ambarella, OmniVision Technologies, GalaxyCore, Qualcomm, Power Integrations, etc.

5.2.6. Uniview

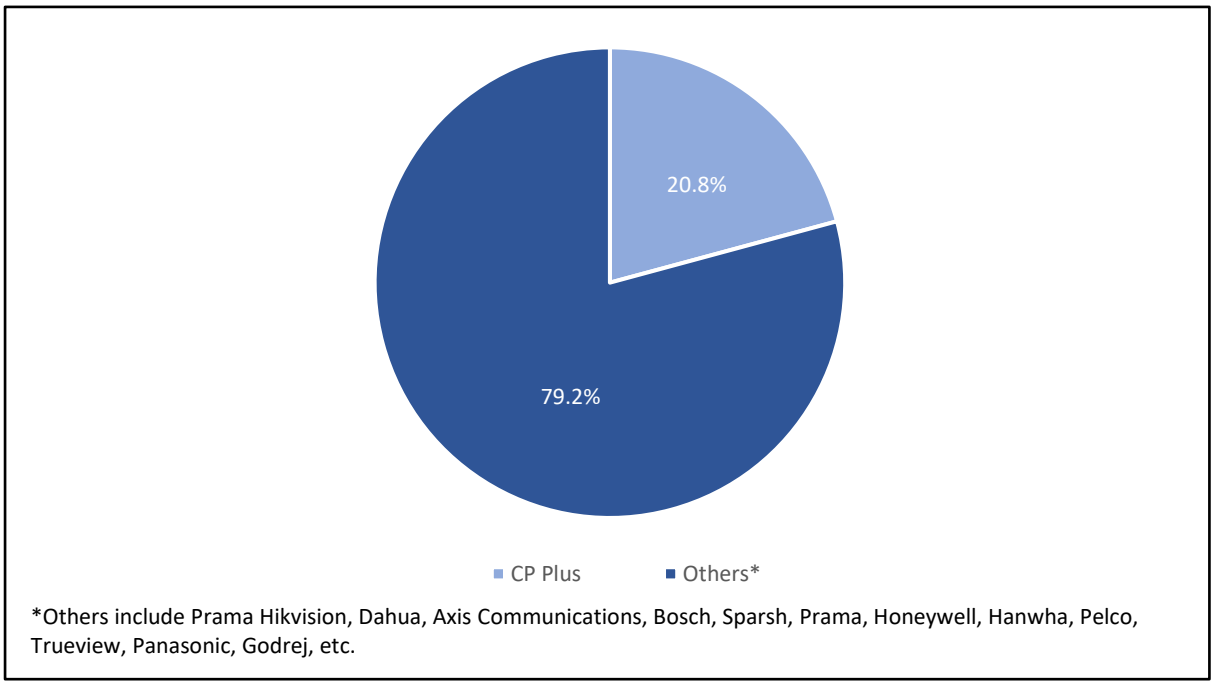
- **About:** Uniview is a technology company recognized for its comprehensive range of video surveillance products and smart office solutions. Being in business for over 19 years, Uniview has successfully delivered over 7,000 projects across various sectors, including smart cities, transportation, industrial parks, commercial establishments, banks, residential areas, schools, and healthcare facilities. Uniview's product offerings include a wide array of IP cameras, network video recorders (NVRs), and associated recording devices. The brand is particularly known for its high-quality video performance and advanced features at competitive prices. Uniview's portfolio features various camera types—including dome cameras, bullet cameras, and PTZ (Pan-Tilt-Zoom) cameras—tailored for applications in diverse environments such as retail, banking, and public spaces.
- **Founded:** 2005
- **Geographical presence:** China (HQ), USA, Mexico, UK, France, Poland, Netherlands, Italy, Turkey, UAE, India, Japan, South Korea, Malaysia
- **Products, solutions and service offerings:**
    - **Products (not an exhaustive list):** IP Cameras, Analog Cameras, PTZ Cameras, Thermal Cameras, Network Video Recorder (NVR), Digital Video Recorder (DVR), Video Intercoms, Display & Control, Storage, Intelligent Computing, Video Management Software, Energy Storage System
    - **Solutions by industry vertical (not an exhaustive list):** Hospitality, Warehouse and Logistics, Healthcare, Education, Retail, Building, Enterprise, Airport, Seaport, Highway, Industrial Park
- **Partner ecosystem:**

- **Technology partners:** 3dEYE, Acoba, AJAX Systems, Arteco, AxxonSoft, Control4, Bosch Security Systems, Crestron Electronics, Deep Sentinel, Digifort, Exacq, Genetec, Milestone Systems, VisioSpace-Hymatom, etc.
- **Channel partners:** Hi-Focus (India), Ingram Micro (India), Petawise Inc. (Canada), ADI (Poland), ELBEX (Germany), Hi-Systems (Austria), CCTV Direct (UK), etc.

5.3. Market share analysis

Video surveillance is a fast-growing market in India. Traditionally, the market has been dominated by several Chinese players like Hikvision and Dahua. Organized players contribute to ~90% of the overall market, while unorganized players contribute to the remaining ~8-10% of the market, mostly in the retail and residential segment. However, since the strong acceptance of the "Make in India" campaign and the central government's initiative to develop home-grown companies, the demand for Indian video surveillance companies have increased. While companies like CP Plus and Sparsh are completely home-grown, Prama Hikvision is a joint venture between Prama India and Hangzou Hikvision Digital Technology Ltd., a global player in security surveillance products. Based on Frost & Sullivan market estimates, Prama Hikvision is currently (in FY 2025) the largest video surveillance player in India. Aditya Infotech owned CP Plus is next in-line in terms of market share (20.8%) and considered significant given its late entry in the video surveillance market among its peers. Notably, CP Plus grew faster than the market average in FY 2025. Dahua remains as another important player in the market. Other important players in the Indian video surveillance ecosystem includes Axis Communications, Bosch, Uniview, Pelco, Trueview, Panasonic, Godrej, etc.

Figure 32: Market share analysis for video surveillance market in India, FY 2025



*Others include Prama Hikvision, Dahua, Axis Communications, Bosch, Sparsh, Prama, Honeywell, Hanwha, Pelco, Trueview, Panasonic, Godrej, etc.

Source: Frost & Sullivan

CP Plus through its innovations aim to deliver excellence to every user – in India. It looks to empower homeowners, businesses, and institutions through its expertise and capabilities. Owned by the Aditya Infotech Limited (AIL) with 25+ years of experience, the company has gained strong market shares in India in the last couple of years already making it among the Top 2 players in the country and the

largest Indian owned company. Aditya Infotech Limited (AIL) has 40 branch offices and return merchandise authorization centres in India with 1,274 employees and 3,200+ factory workers and available across 500+ locations in the country thus positioning it as one India's most prominent video surveillance and security solutions company. Currently, the company has 1000+ distributors in Tier I, Tier II and Tier III cities and over 2,150+ system integrators, to be ranked among the companies with the widest pan India reach within the video surveillance market ecosystem. AIL's well-developed supply chain and deep distribution network helps the company capture growth opportunities across the most important industry verticals. What differentiates Aditya Infotech from its competitors is its:

- CP PLUS' has strong recall value as it is one of the earliest pan-India consumer focused brands in the video security and surveillance space with active marketing and engagement
- First player to focus on creating a consumer brand for the security and surveillance industry in India
- High-capacity manufacturing set-up in the country promoting Make in India campaign emphasizing the production of high-quality technology products and solutions within India
- First player in the security and surveillance industry to localize production in India
- Partnership with Spark Cognition, one of the most advanced AI solutions providers in the world
- List of diversified clienteles spread across multiple verticals – both government and enterprise
- Products sold in 500+ Indian cities and towns in Fiscal 2024 and distribution through India's leading online marketplaces
- Strong partnership with Dixon Technologies (for manufacturing), VVDN Technologies (for technology), and Dahua (for global tech know-how)
- With 1,274 employees have India's largest security solutions workforce, as of March 31, 2025
- 'CP PLUS' and 'Dahua' brands are amongst the prominent brands for CCTV and security products in India in terms of diversity of offerings as of March 31, 2025

Under the brand name of CP Plus, AIL has a wide range of video surveillance solutions ranging from banking, healthcare, education, law enforcement, hospitality, smart traffic, industrial, and retail. The company offers smart home IoT cameras, HD analog solutions, intelligent network cameras, body-worn-cameras, thermal cameras, long-range IR cameras, AI solution with features like artificial intelligence, automatic number plate recognition, people counting and heat map, NVRs, mobile/on-board surveillance, etc. For the residential segment, AIL has consumer range of products in video surveillance and security that includes smart wi-fi cameras, 4G cameras, dash cameras, and more.

AIL has a strategic partnership with Dahua, one of the top players in the video surveillance space globally. The 16-year-old partnership ensures strategic ties and supply side consistency for the company. AIL remains as the exclusive partner for Dahua's presence in India. This signifies the level of trust that AIL has been able to build with Dahua, despite both the companies competing in the same space.

Aditya Infotech started manufacturing its products in Tirupati under the Make-in-India initiative in 2017. The company shifted its manufacturing to Kadapa in 2023 with 3x capacity. It has a current capacity to produce over 17.20 Mn. units annually. As of March 31, 2025, the plant is India's largest CCTV manufacturing facility, also it is the largest manufacturing unit for surveillance products outside of China and the third largest globally in terms of units manufactured in Fiscal 2025. The unit is

equipped with advanced Fuji-made state-of-the-art technology SMT Lines and semi-robotic assembly and packaging lines.

All production area has been designed with ESD flooring, dust-free and air-conditioned environment to achieve the world's best quality of products. Based on reports, the brand's current workforce consists of 45% female workers which makes it unique.

Being an innovation driven company, the video surveillance vendor has its R&D center located in Noida and an Offshore Development Center in Manesar in partnership with VVDN. Both these centers design and develops CCTV hardware, firmware, source code. For the kind of products that AIL has developed and addressed customer needs, the company has earned several awards, accolades, and recognitions from several government and private institutions including ELCINA (Business Excellence Award 2023), Homeland Summit ASSOCHAM (Excellence Award for Most Trusted Brand 2023), BW Security World (Innovative Security Product of the Year Award 2023), Marksmen Daily (Brand of the Year Award 2023-24), etc.

Mentioned below are some of the recent customer wins for AIL (CP Plus):

- **Delhi Government Schools**
- **Bharat Electronics Limited**
- **Cushman and Wakefield**
- **HDFC Ergo**
- **IDFC First Bank**
- **Prayagraj Smart City**
- **Madhya Pradesh Police Station**
- **Delhi Police Station**

Business risks for AIL

AIL which operates under the brand name of CP Plus has quickly positioned itself as one of the leading video surveillance and security players in India. The company has grown faster than the market average (at least in the recent years) through its range of innovative products and solutions, and has successfully been able to gain customer trust. However, much like any other business entity, AIL faces business risks, few of which are influenced by external and internal factors. Listed below are some of the threats and challenges that AIL faces/likely to face over the period of time.

Threats for AIL

Business threats are predominately external factors that could potentially harm a business entity/organisation, its operation, and profitability. Many of these factors are beyond the control of the enterprise nevertheless, quicker the business entity works out a possible solution or alternative, faster it can bounce to growth trajectory.

- **Economic uncertainty:** It refers to uncertainty in business rising out of unpredictable economic conditions. Economic uncertainty rises because of fluctuating market conditions, political instability, changes in government policies, and inflation. Economic uncertainty often results in cautious spending by customers affecting revenue for companies.
- **Supply chain disruptions:** In a situation of supply chain disruption, the normal flow of goods is disrupted within a supply chain which includes delays in production, shipping, or distribution of products that can arise due to various internal or external factors. Common causes of supply

change disruption include natural disasters, pandemics, geopolitical instability, and logistical challenges.

- **Competition:** It is considered one of the biggest threats to any business. Competition impacts businesses by reducing their growth and market share. Profit margins are affected as businesses lower their product prices to attract customers. There remains constant pressure to innovate and to remain a step ahead of its competitors. A chance of customer erosion can be noticed since customers would have more options in a competitive market. Additionally, a new and disruptive market entrant can add even more pressure to the already competitive market.
- **Lack of regulatory mandates and compliances:** Currently there are few industry verticals that have regulations on the mandatory use of video surveillance and security solutions (like CCTV in examination halls, video surveillance in banks, or in public places in select states). While regulations play a critical role in driving the need for video surveillance and security products, a relaxation in the existing regulatory mandates or lack of regulations in any other industry vertical, can dampen the demand for the solutions.

Challenges for AIL

Business challenges refer to difficulties that an organisation must overcome to achieve their goals and maintain healthy operations. Challenges are mostly internal to an organisation which can be addressed through better strategy formulation and course correction by the business entity.

- **Financial management:** Unstructured and poor financial management can lead to several challenges for a company, impacting growth and stability. It is important that the company develops an accurate and realistic financial plan for steady growth. Maintaining a healthy cash flow is critical for running day-to-day business operations. Companies should have minimum debt or liability and should have control over accounts receivable. Margins should be always maintained so that profitability is not questioned.
- **Talent management:** For a company to be leader in its space, it is important to attract, hire, develop, and retain the best talent. It is critical for the company to actively seek the best talent and ensure that the right person is selected for the job. A culture of innovation and idea sharing should be promoted within the company. Also, the best performing employees should be identified and rewarded to keep them motivated. It is imperative that talent acquisition and retention are critical aspects of a successful business strategy.

6. Competitive Profiling of CP Plus Peer Group

Figure 33: Competitive profiling, CP Plus peer group

Company Name	Aditya Infotech Limited	Zhejiang Dahua Technology Co., Ltd.	Prama Hikvision India Private Limited	Samriddhi Automations Pvt. Ltd.	Axis Communications AB.	Zhejiang Uniview Technologies Co., Ltd.
Overview						
Brand Name	CP Plus	Dahua	Prama Hikvision	Sparsh	Axis Communications	Uniview
Founded	2007	2001	2009	2002	1984	2005
HQ	India	China	India	India	Sweden	China
Total Employees	1000+ employees & 2,900+ factory workers (2024)	~23,000 (unverified) (2025)	Hikvision: ~3,000 (unverified) (2025)	~350 (2024)	4,879 (2024)	NA
Operational Profiling						
Capacity and Production Volume	Production Capacity: 25 Lakh Surveillance units with expandable upto 50 Lakhs (Monthly)	NA	Production Capacity: 15 Lakh Surveillance units (Monthly)	Production capacity: 25 Lakh units (Annual)	NA	NA
Production Unit Location	India (Kadapa; Andhra Pradesh)	China (Hangzhou, Shanghai; Zhejiang)	India (Mumbai)	India (Haridwar, Noida and Kashipur)	In Partnership with Jabil, Poland (Kwidzyn)	China (Zhejiang)
Domestic vs International Revenue	Over 99% Domestic Revenue	Domestic vs Export Revenue split not available however, in 2021 international revenue growth outpaced domestic growth by nearly 8% points	Hikvision Prama is the India Subsidiary of Hikvision focusing on the Indian Market	Domestic vs Export Revenue split not available however, the company exports to more than 10 countries including regions in North America, Europe, Sri Lanka, and Bangladesh	Domestic vs Export Revenue split not available however, based on Frost & Sullivan estimates US revenues were estimated to be 43% in 2022 and the rest (57%) from other markets	Domestic vs Export Revenue split not available however, it is estimated that the company's domestic market presence in China is strong
Core Video Surveillance Products#	✓	✓	✓	✓	✓	✓
Cameras	✓	✓	✓	✓	✓	✓
Recorders	✓	✓	✓	✓	✓	✓
Encoder	✓	✓	✓	✓	✓	✓
Software	✓	✓	✓	✓	✓	✓
Other Advanced Products	✓	✓	✓	✓	✓	✓
Access Control	✓	✓	✓	×	✓	✓
Intercom	✓	✓	✓	×	✓	✓
Alarm	✓	✓	✓	×	✓	✓
Display	✓	✓	✓	×`	✓	✓

Mobile	✓	✓	✓	✓	✓	✓
Distribution Network	550+ distributors, 1,800+ system integrators, and 30,000 T2 partners (global)	Leverages CP Plus for product distribution in India	NA	2,000+ partner/reseller – global (in 2016)	90,000+ partners (global)	NA
Financial Profiling^						
Total Income /Revenue	INR. 31,229.25 Mn. (Equivalent ~$369.58 Mn.) (FY 2025)*	RMB 32,180.93 Mn. (Equivalent ~$4,420.88 Mn.) (FY 2024)**	INR 29,093.43 Mn. (Equivalent ~$350.37 Mn.) (FY 2024)***	INR. 2,711.31 Mn. (Equivalent ~$32.65 Mn.) (FY 2024)****	SEK 17,396.1 Mn.[!!] (Equivalent ~$1,669.8 Mn.) (FY 2023)*****	RMB 6,073.0 Mn.[!!] (Equivalent ~$851.3 Mn.) (FY 2021)******
EBITDA	INR. 2,583.87 Mn. (Equivalent ~$30.58 Mn.) (FY 2025)*	RMB 4,556.53 Mn. (Equivalent ~$625.97 Mn.) (FY 2024)**	INR 6,163.02 Mn. (Equivalent ~$64.63 Mn.) (FY 2024)***	INR 145.30 Mn. (Equivalent ~$1.75 Mn.) (FY 2024)****	NA	NA
EBITDA Margin	8.27%	13.73%	20.71%	5.36%	NA	NA
PAT	INR. 1,027.38 Mn. (Equivalent ~$12.16 Mn.) (FY 2025)*[!]	RMB 2,905.73 Mn. (Equivalent ~$399.18 Mn.) (FY 2024)**	INR 2,313.94 Mn. (Equivalent ~$27.87 Mn.) (FY 2024)***	INR 46.924 Mn (Equivalent ~$0.57 Mn.) (FY 2024)****	NA	NA
PAT Margin	3.29%[!]	8.76%	7.78%	1.73%	NA	NA
ROE %	72.79%	7.82%	49.66%	15.79%	NA	NA
ROCE %	53.14%	11.95%	69.65%	14.95%	NA	NA

Only relevant to video surveillance products

* Source: As received from Aditya Infotech Limited, FY 2025 (Apr 2024 to Mar 2025), $1 = INR. 84.56

** Source: Zhejiang Dahua Technology Annual Report 2024, FY 2024 (Jan 2024 to Dec 2024), $1 = RMB/CNY 7.27

*** Source: PrivateCircle (Prama Hikvision India Private Limited), FY 2024 (Apr 2023 to Mar 2024), $1 = INR 83.03

**** Source: PrivateCircle (Samriddhi Automations Pvt. Ltd.), FY 2024 (Apr 2023 to Mar 2024), $1 = INR 83.03

***** Source: Axis.com, FY 2023 (Jan 2023 to Dec 2023), Kr.1 = $0.095

****** Source: finance.sina.com, FY 2021 (Jan 2021 to Dec 2021), RMB/CNY 1 = $0.139

! Before exceptional items

Formulas:

- Total Income: Total Income means addition of revenue from contracts with customers and other income.
- EBITDA: Restated profit after tax for the year/ period before exceptional items + finance costs + total tax expense/(credit) + depreciation and amortization expense.
- EBITDA Margin: EBITDA/ Total Income
- PAT: profit for the year / period provides information regarding the overall profitability of the business.
- PAT Margin: PAT/ Total Income
- ROE: Restated profit after tax for the year divided by total equity
- ROCE (%): Earning before interest and tax (EBIT) / Capital Employed. EBIT = "Profit before tax + Finance cost" and Capital Employed is calculated as "Total Equity Non-Current Borrowings + Current Borrowing"

Glossary

Abbreviation and Terminology	Description
APAC	Asia Pacific
ASEAN	Association of Southeast Asian Nations
Bn.	Billion
CAGR	Compound Annual Growth Rate
CCTV	Closed Circuit Television
Cr.	Crore
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
FY	Financial Year
GDP	Gross Domestic Product
HQ	Head Quarters
IMF	International Monetary Fund
INR.	Indian Rupee
IP	Internet Protocol
Mn.	Million
OPEX	Operational Expenditure
PAT	Profit After Tax
ROCE	Return on Capital Employed
RMB/CNY	Rénmínbì, Chinese Yuan Renminbi
ROE	Return on Equity
UK	United Kingdom
USA	United States of America
WEO	World Economic Outlook
Yrs.	Years
$	US Dollar

FROST & SULLIVAN

IMR Report_CP Plus (Aditya Infotech)

28 May 2024

TABLE OF CONTENT

A.N.

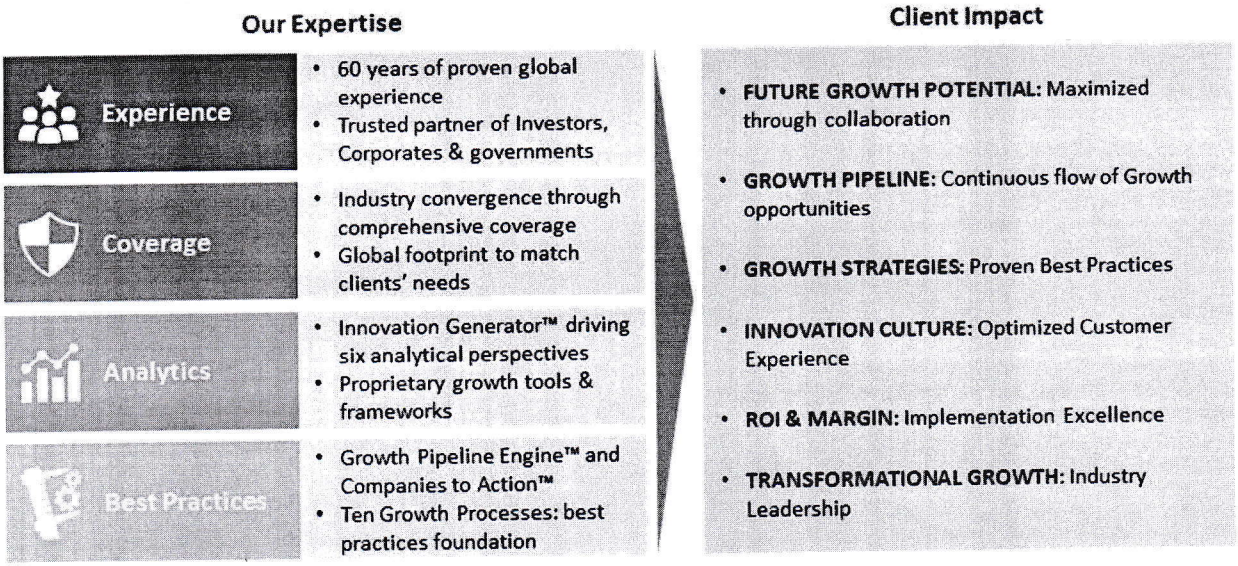
Frost & Sullivan: Introduction

Founded in 1961, we are a global company with 40+ offices on 6 continents. Frost & Sullivan has the *broadest industry coverage of any company in the world - covering* 10 key industries, 35 sectors, and 300 markets. As the market leader in growth consulting, we deliver a global perspective that companies need to be successful in a truly global economy.

Frost & Sullivan's focus is to help companies achieve real and sustainable growth. Our market intelligence, customized growth consulting, growth strategies and IPO support, enable CEOs and their growth teams to identify growth opportunities, effectively evaluate which have the highest probability for success, and create highly effective collaborative teams that deliver results.

Frost & Sullivan works closely with companies and their management teams to accelerate growth and achieve best-in-class position in growth, innovation, and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverage`s over 47 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community.

i. Market Intelligence Services
ii. Growth Consulting Services
iii. Growth Implementation Services



Frost & Sullivan Global Reach:

What makes Frost & Sullivan unique?

- **Focused Exclusively on Growth** – Frost & Sullivan works with clients to develop innovative growth strategies based on market intelligence, best practices, and industry thought leadership.
- **Broadest Industry Coverage of any Company Globally** – Today more than ever it is essential that companies look at more than just their own industry. Economic shifts and emerging technologies are creating both competition and growth opportunities every day and successful companies must look at a number of industries and markets in which to build successful growth strategies.
- **Global Team of Analysts and Consultants** – With over 1,800 industry analysts and consultants in 40 offices covering 80 countries, Frost & Sullivan is well positioned to ensure clients have a timely understanding of global and regional industries and markets. We offer global support, coverage, and perspectives allowing clients to effectively operate in today's global marketplace.
- **Industry and Career Focus** – Frost & Sullivan understands that executives need more than just industry information; they need to capture best practices about ways to make their contribution to their companies more effective. By researching and capturing best practices, bringing together industry thought leaders with the most encompassing market intelligence.
- **360 Degree Perspective** – Frost & Sullivan's proprietary approach integrates 7 key research methodologies to significantly enhance the breadth and accuracy of decision-making capabilities.
- From Market Research, IPO Support to implementation of marketing programs- Building on our comprehensives research base covering market, technology, economic and customer research-Frost & Sullivan works closely with clients to create successful integrated marketing programs to enhance our clients' brand, create powerful demand generation programs and support revenue generation programs. Continuous Market Monitoring – Frost & Sullivan produces a market information database that is considered one of the best collections of high technology information, market research, and intelligence in the world. Our leading industry analysts add to this daily from our global research offices.

A.N.

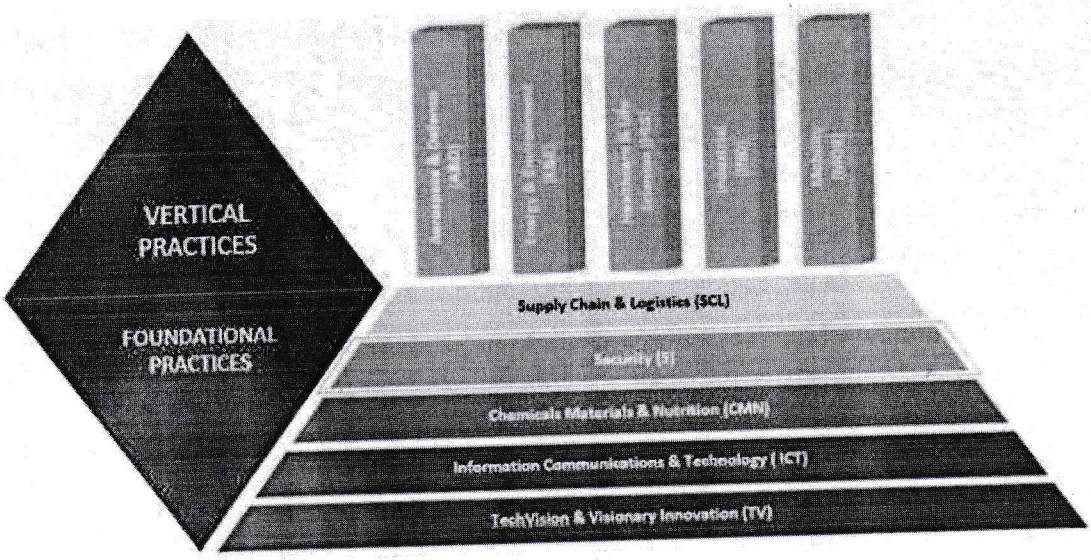
Industries & Markets

Frost & Sullivan gives our clients visibility to the most extensive range of growth opportunities, because we have the broadest industry and market research coverage of any company globally. With over 1,800 analysts and consultants on the ground in markets around the globe - we are your global partner.

Our proprietary methodology helps us track multiple industries seamlessly and provide our clients with information of their industries and also their support and servicing industries. Our Methodology enables a client to have

- Continuous access to leading global research that encompasses economic, technology, industry, competitive, customer, and best practices information to make critical growth decisions
- Market information and analysis across a broad industry spectrum that ensures clients maintain a close eye on their markets, as well as complementary and converging markets
- Access to global Industry Analysts and Thought Leaders to personally discuss critical growth issues and gain a more in-depth perspective on the markets
- Real-time technology intelligence, including emerging and disruptive technologies, new R&D breakthroughs, and technology forecasting and impact analysis
    - Comprehensive analysis of key growth markets to provide clients with financial, marketing, and business development information on current trends and issues that impact investment and financial decisions

OUR INDUSTRY COVERAGE:



Project Background

CP Plus wants to map the Video surveillance and Security market in India with a specific focus on end user segments and competitive benchmarking. They have approached Frost & Sullivan to undertake a market study exercise in pursuit of the above objective.

Proposed Table of Contents

1. Overview of Global economy (1-2 pages)
   - Review and outlook of Global GDP and GDP growth
   - Growth, Inflation, Per Capita Income
   - Population details: Total, Break-up by Gender, Median Age, etc.
   - Overview of Indian economy (2-3 pages)
   - Review and outlook of GDP and GDP growth
   - Growth, Inflation, Per Capita Income

2. Details of Global & India Digital Video Surveillance & Security Market
   - Global Digital Video Surveillance & Security Market – Past & Future Growth
   - Domestic Digital Surveillance & Video Security Market – Past & Future Growth
   - Break-up by Top Countries Viz. US, Europe, India, China, Rest of APAC
   - Break-up by Use: Commercial Offices, Retail Establishments, Common Infrastructure & Consumer Uses
   - Video Hardware – Security Cameras: Analog & IP
   - Ancillary Hardware – Recorders, Cables, etc.
   - Software, Video Management & Storage
   - Security as a Service – Value added services of surveillance, monitoring & managing critical establishments; Annual Maintenance Contracts

3. Details of Global & India Digital Video Surveillance & Security Hardware Manufacturer
   - Top Global Manufacturer, their business model, Scale, Technology & Geographical Presence; Viz. US, Europe, India, China, Rest of APAC
   - Brief overview of the transition of the industry over the years
   - Understanding the Value Chain for Security Hardware Market
   - Understanding the Value Chain for Digital Video Surveillance & Security Market – Rest
   - Expansion in the related segments : Body Cam, Dashboard Cam, Digital Entry Points

4. Review and outlook key end user industries:
   - Review, importance of remote surveillance, growth drivers & demand outlook, challenges.
   - End-User Industries overview:
     a. Banking (Bank + ATMs among others)
     b. Financial Services
     c. Retail Outlets
     d. Commercial Office
     e. Infrastructure
     f. Consumer Use
     g. Law Enforcement
     h. Smart Traffic

- Other differentiated use cases - Events Security Surveillance Industry

5. Government Policies & Regulatory Support; Key Geographic & Security Risk:
   - Government support on Manufacturing of Electronic Products in India – PLI & Other Schemes
   - Indian Government Preference to shift away from China/Import Substitution Policies and related initiatives
   - Global Preference away from China; China + 1 strategy [Case study: US & Other developed countries]

6. Competitive benchmarking of 4-5 key companies competing with CP Plus (Aditya Infotech)
   - Key players (Global players, domestic presence of global players, regional players, organized vs unorganized)
   - Operational Profiling
   - Capacity and Production Volume
   - Vertically (backward) integrated facilities
   - Domestic vs Export Revenue
   - Products & SKUs; Price Range
   - Distribution Network

7. Financial profiling of 4-5 players
   - Revenue from operations
   - EBITDA & Margin %
   - PAT & Margin %
   - ROE, % (PAT / net worth)
   - ROCE, % (EBIT / total assets less current liabilities)
   - Working Capital Days
   - Spend on Marketing

8. CP Plus Portfolio
   - About CP Plus
   - Lines of Business
   - Sales and Marketing Strategy
   - Awards, Recognition and Certification
   - Unique differentiation

NOTE: Company Positioning Points to include:

- Market Share of [xx] as Total [Organised + Un Organised]
- Pan-India presence with [550+ Distributors, 1,800+ System Integrator, 44 RMA Center, 30,000+ T2 Partners]
- India's no.1 Video Surveillance & Security Solutions Player
- India's largest provider security as a services solution players
- Faster growing player in the segments
- India's largest & world's 3rd largest CCTV manufacturing unit including largest plant outside China

- Demonstrated by the collaboration with VVDN Technologies in crafting cutting-edge CP Plus chipsets
- E-comm marketplaces Amazon and Flipkart: 40% market share

Timelines:

7weeks from the date of signing of the LoA

- 6 weeks for an interim draft report
- Additional 1 week to close the rest of the report and address comments / incorporate feedback
- The project will commence only on receipt of formal confirmation and receipt of advance payment

Commercials

INR 29.0 Lacs + Applicable Taxes

Invoicing Terms:

- 50% on sign off
- 30% on delivery of the interim draft report
- 20% on delivery of the final report

Payment Terms:

- Due now

Terms & Conditions:

- All invoices are due upon receipt. Unpaid invoices not paid within 30 days will be subject to a 1.5 percent late fee per month past due.
- Any change in the scope or content of work from that stated in the project scope will be reflected in a change of work order, agreed upon by both the Client and Frost & Sullivan. The revised scope may reflect additional billing as required and may result in a revised invoice or be reflected in a time and expenses billing. This additional work will begin only when the change order signed by the Client is received by Frost & Sullivan.
- The stated project fee includes the delivery to the Client at the project's completion of electronic copies of the research deliverables for this project in PowerPoint, Word or Excel formats.
- Frost & Sullivan will undertake on update within the scope of study based on query coming in from client to one or two sections of the study based on recent updates that has been published in the public domain within a period of 120 days from the date of delivery of the report. Any updates exceeding the above will be reviewed by Frost & Sullivan with additional cost.
- Frost & Sullivan retains the right to use market related knowledge from this project as part of its ongoing research, with the exception of confidential materials that provide or relate to Client information, customized metrics and strategic recommendations developed specifically for the Client in the context of this project.
- Written deliverables may be reproduced in printed and electronic format for distribution within the client organization. Any part of this report that is used in public domain communications (e.g. press releases) be reviewed and approved by Frost & Sullivan prior to their publication. This is to

assure that any data or conclusions are presented in the proper context, to avoid any misunderstanding by the reader or audience, and to ensure the accuracy of the data.

- Neither the Client nor its parent or any subsidiary organization will actively solicit to employ any Frost & Sullivan employee connected to this project for a period of 12 months following project completion. Should such an event occur, The Client agrees to damages of two times the person's annualized salary, due and payable immediately to Frost & Sullivan.
- Frost & Sullivan will always strive to provide first-rate work. However, there is no representation of certainty, express or implied, by Frost & Sullivan, except in the case of demonstrable negligence on the part of Frost & Sullivan. This is because the markets we study have varying degrees of fragmentation. The Client acknowledges this and accepts this point. The Client waives any claim to actual, consequential, or punitive damages against Frost & Sullivan based on their reliance on Frost & Sullivan's work, except in the case of demonstrable negligence on the part of Frost & Sullivan.
- Some data may be considered proprietary or sensitive by companies and/or individuals to be interviewed or surveyed, and they may be unwilling to divulge any given piece of information or data to Frost & Sullivan. All research and analysis will therefore be executed on a "best efforts" basis.
- The Client shall have 10 business days following the final presentation of the project results to request clarifications or submit questions that are reasonable and within the original scope of the project. Additional work beyond the scope of the project or the 10 business days will be billed on a time and expenses basis.
- The Client may terminate this agreement provided there is a reasonable basis and that an agreement is signed in writing by both parties. Work on the engagement will cease on the day that the request to terminate is received by Frost & Sullivan. The Client agrees to pay Frost & Sullivan
    - a pro rata fee for tasks accomplished plus related direct expenses incurred prior to termination
    - a cancellation penalty of 10% of the full contract value,
    - Any costs Frost & Sullivan has incurred and/or any non-refundable portion of committed costs incurred prior to Frost & Sullivan receiving the engagement termination request.
    - Termination charges will be invoiced to the Client and must be paid in full immediately.
- Frost & Sullivan shall not be liable for delays or failures in performing its obligations resulting from any cause beyond Frost & Sullivan's reasonable control. In the event of any material delay, Frost & Sullivan will notify the Client and specify the revised schedules as soon as practicable.
- Both parties must agree upon any change, extension or reduction in the scope of the project in writing. The revised scope will be reflected via either a revised letter of engagement or a time and expenses billing, which will reflect additional billing as required to complete additional work.
- The Client may request Frost & Sullivan to make additional presentations of results of this project beyond what has been specified in the project scope. Frost & Sullivan will bill the Client on a time and expenses basis, including preparation, presentation and time.
- All of our material is by default written in English, unless it has been specifically agreed in the context of the project definition that our material would be written in another common language. In case the Client wishes to have our material translated in an additional language all translation costs will be charged to the Client.

Letter of Agreement:

A.N.

By signing this agreement both parties commit to the project as laid out in its entirety in the proposal dated May 28 2024 and the terms and conditions outlined in this document.

Engagement Title	**IMR Report_CP Plus (Aditya Infotech)**
Invoicing Value	**INR 29.0 Lacs + Applicable Taxes**
Invoicing Terms	• 50% on sign off • 30% on delivery of the interim draft report • 20% on delivery of the final report
Payment Terms	**Due Now**
Whether PO is mandated by client before sending the invoice	**NO**
Parties to this Contract:	
Frost & Sullivan (India) Private Limited ASV Hansa, No. 53 Greams Road Thousand Lights, Chennai – 600 006, Tamil Nadu Phone: 91.44.61606666 Fax: 91.44.42300369 CIN-U74140TN1999PTC079226 GSTIN*: 33AAACF4252A1ZE	**Company Name: Aditya Infotech Limited** **Company Address: A-12, Sector 4, Noida-201301, UP, India.** **GST Details: 09AABCA1601R3ZL** **TAN Details: DELA07429C**
Signature:	**Signature:**
Name: Shylesh Narayanan	**Name: Anup Nair**
Title: Vice President & Country Head – South Asia	**Title: President - Strategy & Business Development**
Date: 30.05.2024	**Date:**