Datamatics
Business Solutions

Smart Manufacturing Market

Forecast to 2025, and Covid-19 Impact

By Technology (IIoT, AI, Blockchain, 3D printing, Collaborative robots, Machine monitoring, Machine Vision and others), End Use Vertical, By Geography

January 2021

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Objective & Scope

Objective: To assess the Global Smart Manufacturing market, identify the key growth opportunities, and understand the competitive scenario

Scope coverage

Focus Products

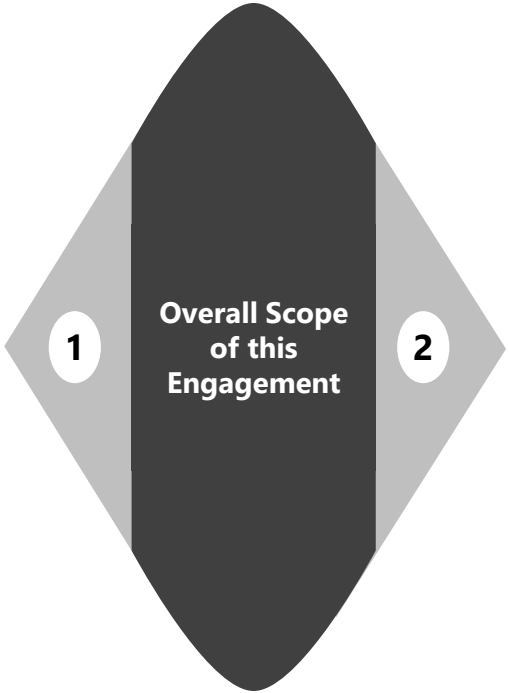
- Enabling Technologies(IIoT, AI, Blockchain, CoBoT, AR & VR, Digital Twin)
- Component Type (Control Devices, Sensors, Robotics, Machine vision systems, others)

Focus End-use Sectors

- Automotive
- Aerospace & Defense
- Oil & Gas
- Food & Beverages
- Pharma
- Medical Devices
- Semi-conductor
- Others (Energy & Power, Packaging, etc.)

Focus Geography

- Global
  - North America
  - Europe
  - Asia Pacific
  - (Others) Middle East & Africa



Scope of study

- Overview of the Smart Manufacturing market
- Detailed assessment of the key end-use sectors for smart Manufacturing market – current state & outlook
- Current and forecast market for Smart Manufacturing (2020 – 2025)
- Segmentation of the market by end-use sector, Enabling Technologies, Component Type, etc.
- Key trends analysis to understand the potential impact on the smart manufacturing market
- Analysis of the key drivers and challenges impacting the market growth
- Competitive landscape within the global smart manufacturing market
- Profiles of the key manufacturers like ABB Ltd, Emerson Electric, Robert Bosch, General Electric, Siemens, Yokogawa Electric

1.3 Research Methodology

Secondary Research

- Preliminary data was gathered using extensive secondary research and information from proprietary databases
- Insights on the market drivers and challenges, and suppliers, their solutions, key developments and so on were developed

Primary Research

- Insights were developed through primary interviews with industry stakeholders, related to smart manufacturing market and key suppliers
- The stakeholders included senior personnel from smart manufacturing vendors, distributors, end-user company procurement personnel across different sectors and industry experts
- This data was triangulated with the insights developed though secondary research

Synthesis of findings

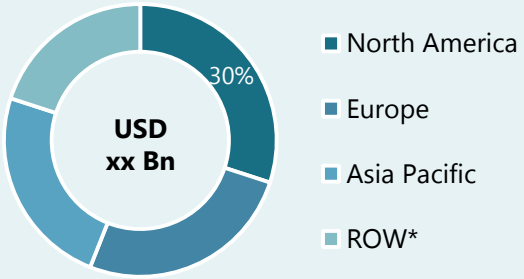
- Analyzed data through qualitative research techniques and derived key insights to streamline the study flow
- Data is presented in a module based approach

2. Executive Summary
2.1 *Smart Manufacturing Market and regional Analysis*

Market Analysis

- The global Smart Manufacturing market was valued at USD xx Bn in 2019, and it is projected to reach USD 268.8 Bn by 2025 growing at a CAGR of xx% from 2020 to 2025. The growth is mostly driven by the rising adoption of Industry 4.0, Smart Factories, Robotics and Artificial intelligence (AI) in manufacturing sectors
- Growing adoption of M2M(machine2 Human)/ Industrial IoT connections is likely to drive the smart manufacturing market in large and small enterprises. Many emerging business models and applications are focused on reducing device costs allowing faster adoption of IIoT and connected devices such as Collaborative Robots, Machine conditioning Monitoring, and Digital Twin
- Several ongoing smart city projects across the world are likely to offer opportunities to Smart Manufacturing solutions. Globally, at least 30 new smart cities are expected to built by 2025; nearly half of these will be from North America and Europe
- The growing manufacturing spending in countries such as India, Italy, Spain, Canada, and also countries from Africa are expected to drive the demand growth for smart manufacturing solutions. Smart factories are being increasingly adopted in sectors such as automotive, food & beverages, pharmaceuticals and medical devices, aerospace & defense, oil & gas and semiconductors
- Global players such as ABB Ltd, Fanuc, Emerson Electric, Mitsubishi Electric and others are strategically expanding their market presence through partnerships, acquisitions and continuous innovation. Several new/improved products and services being launched meeting the demand for smart manufacturing and smart factory solutions

Smart Manufacturing 2019 by Region



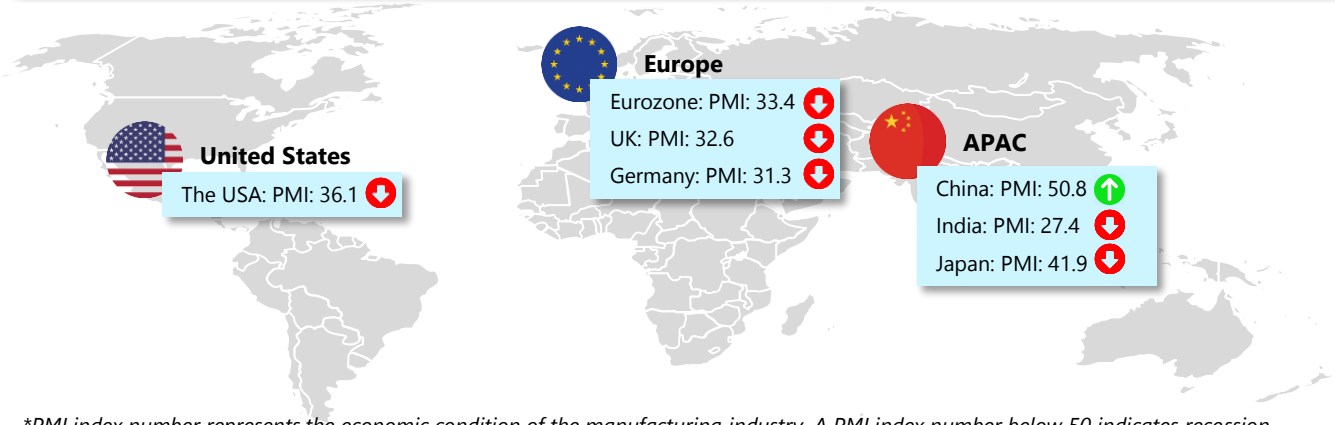
Key Smart Manufacturing Players in 2019

ABB, Mitsubishi Electric, Emerson, Rockwell Automation, Siemens, Schneider Electric

3. Global Smart Manufacturing Market

3.1 *Impact of Covid-19 on Global manufacturing Industry*

Purchasing Managers Index (PMI*), has seen historic lows across the world



**PMI index number represents the economic condition of the manufacturing industry. A PMI index number below 50 indicates recession*

Key Sectors Manufacturing affected

Neutral	Negative	Positive
✓ Semiconductor	✓ Automotive	✓ Medicine
✓ Electronics	✓ Chemicals	✓ Medical Devices & Equipment
	✓ Petrochemicals	✓ Disinfectants & Sanitizers
	✓ Food & Beverages	

Geographical Changes

- ✓ Potential shift in production base from China to other low cost locations less impacted by Covid
- ✓ Rise of smart manufacturing, automation and digitalization
- ✓ Adoption of technologies such as AI, AR, Digital Twin likely to gain momentum
- ✓ Emphasis on localization to shorten supply chain

- Shutdown of manufacturing units resulting in decreased production volumes
- Disruptions in global supply chain
- Decline in global FDI inflows
- Job losses to control fixed costs
- Asian Countries like **India and Vietnam** are being considered as new manufacturing destinations posing competition to China
- South Korea plans to shift some of its factories to India. POSCO and Hyundai Steel are considering Andhra Pradesh (India) as a likely place to set up their factories
- Japan reportedly is **spending USD 2.2 Bn** to help companies to shift out of China

3. Global Smart Manufacturing Market

3.2 *Impact of COVID-19 On Smart Manufacturing*

Smart Manufacturing Technology Initiatives

Collaborative Robot

- Usage of collaborative robots and robots has scaled multifold during the pandemic. The absence of labor during the lockdown for straight 8-12 weeks has pushed many manufacturers to rethink automation and adopt remote manufacturing
- As the need for industrial robots is being felt more fervent, newer use cases are being developed for implementation of Cobots to support various end-use sectors including healthcare, automotive and F&B

Artificial Intelligence

- With the growing advancements in big data analytics, the application of AI is likely to increase especially across sectors including health informatics, BFSI, E-commerce, and retail, etc.
- COVID-19 has accelerated AI's replacement of humans as a factor of production and factory automation
- AI will be useful in data analysis, product tracking, predictive maintaince, treatments, consumer patterns, and other benefits for smart manufacturing

Industrial IIoT

- Work from home and remote operation, or remote automation has surged the demand for expanding Industrial IIoT and providing collaboration capabilities to combat unexpected disruptions
- Equipment manufacturers are rapidly adopting IIoT to build operational efficiencies likes asset health monitoring and predictive maintenance, and to explore new sources of manufacturing and control production costs during the pandemic

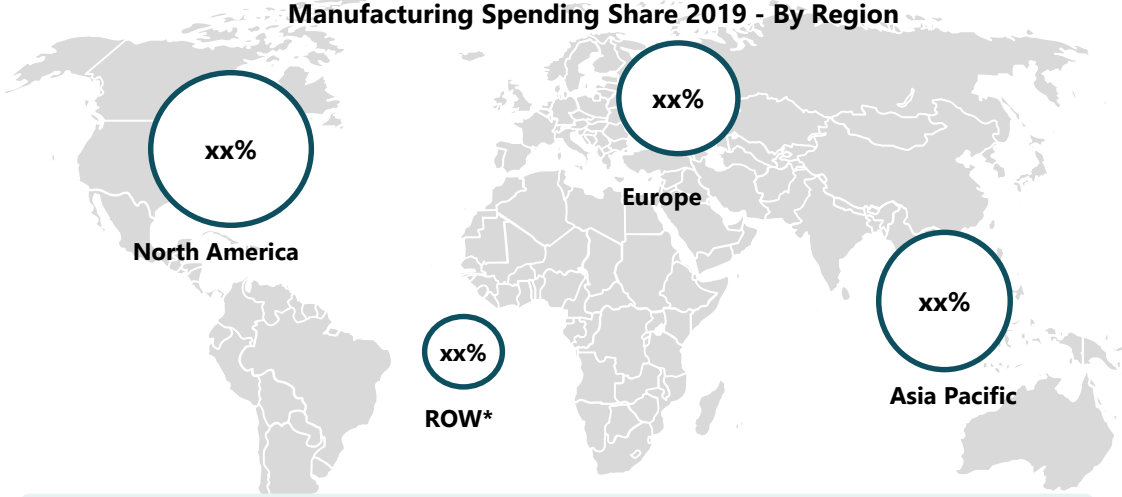
Strategies Adopted By Top Manufacturing Companies Post Pandemic

- **Remote automation will be the future for IT World**
- **Enhancing customer experience Through Digitalization**
- **Artificial intelligence will be the new norm**
- **Block chain to solve global supply chain concerns**
- **Autonomous technology in controlled environment**
- **Digital Twin – extending capabilities beyond asset management**

3. Global Smart Manufacturing Market
3.3 *Global Manufacturing Spend Outlook*

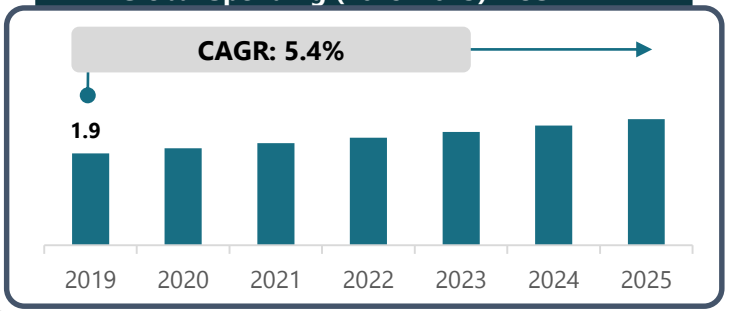
Global Manufacturing Spending Outlook

Manufacturing Spending Share 2019 - By Region

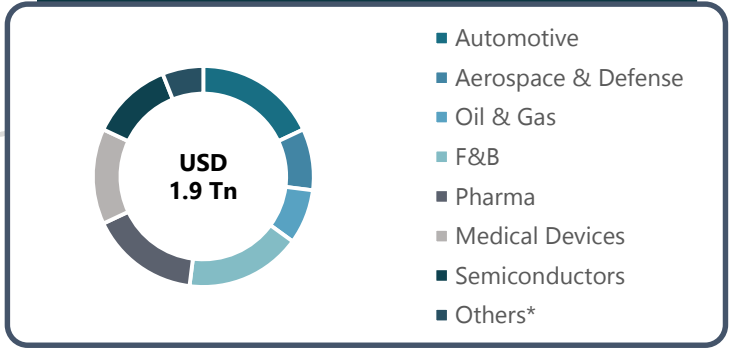


- Global spending is expected to decrease slightly in 2020 because of the negative investment sentiments due to COVID-19 pandemic. However, it will steadily increase from 2021 to grow at a CAGR of xx% by 2025
- North America holds the largest share of the global spending primarily being the hub for most innovations in manufacturing and due to higher technology adoption
- Asia Pacific is projected to grow with the faster CAGR till 2025

Global Spending (2019-2025) – USD Tn



Global Spending by End-Use Sector (2019)



3. Global Smart Manufacturing Market
3.6 *Key Industry Growth Drivers & Challenges*

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Key Industry Growth Drivers

Impact of Digital Transformation

- The world is experiencing digital transformation with organizations and governments increasing spending in Digital Technologies such as Industry 4.0 and Industrial IoT
- Effortless monitoring, reduction of waste, and speed of production are some of the advantages of smart manufacturing. These technology advancements offer end users improved quality, standardized and dependable products at much lower cost

Rising Demand For Energy Efficiency

- With the rapid development of sensing, communication, computing technologies, and analytics techniques, manufacturing is marching towards new generation of sustainability, digitalization, and intelligent factories and smart manufacturing techniques
- Investments in smart manufacturing will directly yield significant energy savings with future-oriented and custom-made solutions for smart metering (electricity, gas, water, air renewable energy), volume monitoring with different types of analyses (air quality, temperature, humidity), tracking/ localization and machine status monitoring

Rise of Industrial IoT in Smart Manufacturing

- The growing sophistication of investments in smart manufacturing is leading to diversion of technologies such as IIoT. Such technologies are transforming production and business management processes creating smart factories. Also IIoT is one of the core driving forces behind Industry 4.0
- The implementation IoT in smart manufacturing has become a key goal for numerous enterprises, Many of the global enterprises are investing in IIoT for smart manufacturing. Companies are expecting at least 12% of efficiency gains over the next five years

3. Global Smart Manufacturing Market
3.6 *Key Industry Growth Drivers & Challenges*

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Key Industry Challenges

Huge Capital Investments for Transformations

- Smart manufacturing is expected to drive around 27% increase in manufacturing efficiency over the next five years which can add more than USD 500 billion in to the global economy
- Despite the favorable operational and running costs, the capital needed to implement smart manufacturing technologies is not simple compared to any conventional methods. The adoption rate could be limited because of such initial costs
- However, it is expected that in the medium to long term, capital costs are expected to come down making the implementation more friendly to the industry

Lack of skilled professionals

- Availability of skilled security professionals with know-how of specific Smart Manufacturing solutions is one of the prime challenges faced by the Smart Manufacturing industry It is estimated that there will be nearly 3.5 Mn vacant Smart Manufacturing jobs globally by the year 2021, up from around one million positions in the year 2014

4. Global Smart Manufacturing Market

4.2 *Market Ranking of Key Players, 2020*

Key Players by Offerings

Industrial IoT	Artificial Intelligence (AI)	Blockchain	3D Printing	Collaborative Robot (CoBot)	Machine condition monitoring (MCM)	Industrial Machine Vision	Others*
Key Players	Key Players	Key Players	Key Players	Key Players	Key Players	Key Players	Key Players
Honeywell	Yokogawa	Oracle		Siemens	Instruments	systems	Honeywell

Note: The above companies in each category does not represent ranking

***Others – Automated guided vehicles, AR&VR, Digital Twin**

4. Global Smart Manufacturing Market

4.4 *Smart Manufacturing Market Composition*

Competition – Global & Regional Players

- Global smart manufacturing market is highly fragmented owing to the presence of large multinational and numerous small regional vendors
- The market has lucrative prospects, with many players offering technologically advanced solutions to small and medium-sized businesses (SMB's). The new factory automation is gaining as it is specifically designed to overcome the modern-day production challenges and produce goods more efficiently and accurately
- Smaller regional players are on the look out for financial boost either in terms of funding from third party companies or partnerships with larger smart manufacturing companies in order to come up with new advanced and specialized products in the market

Global Players

Global companies are growing in the smart manufacturing market

automation

Regional Players

The US is one of the key geographies with presence of a large

Smart Manufacturing Market Assessment

5.1 Smart Manufacturing Market Assessment by Enabling Technology

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Smart Manufacturing Market Assessment by Enabling Technology

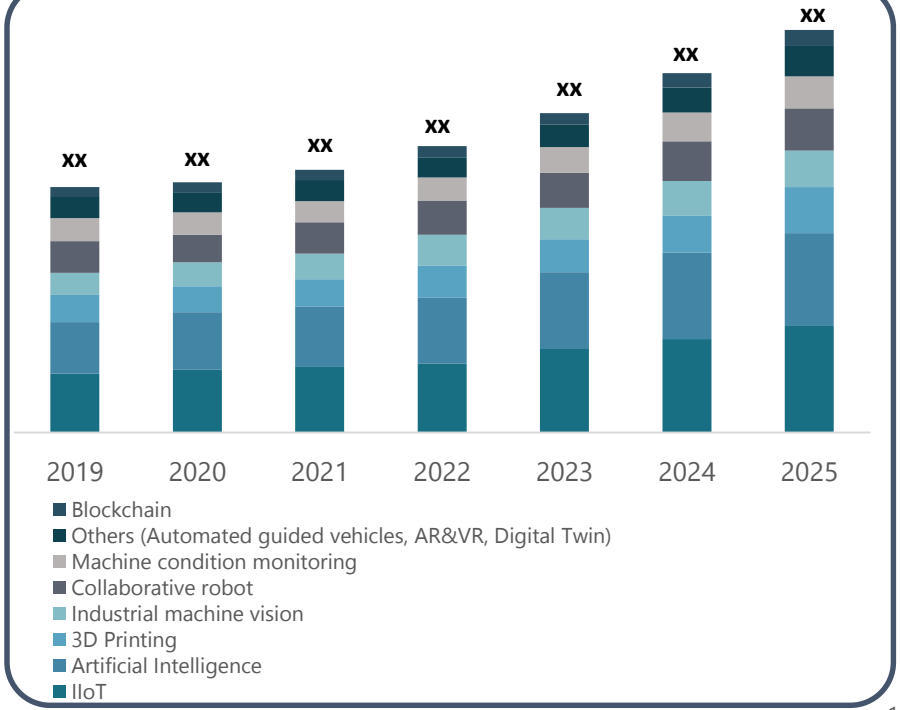
Global Market Share by Technology (2019 and 2025)

IIoT
27%

2025

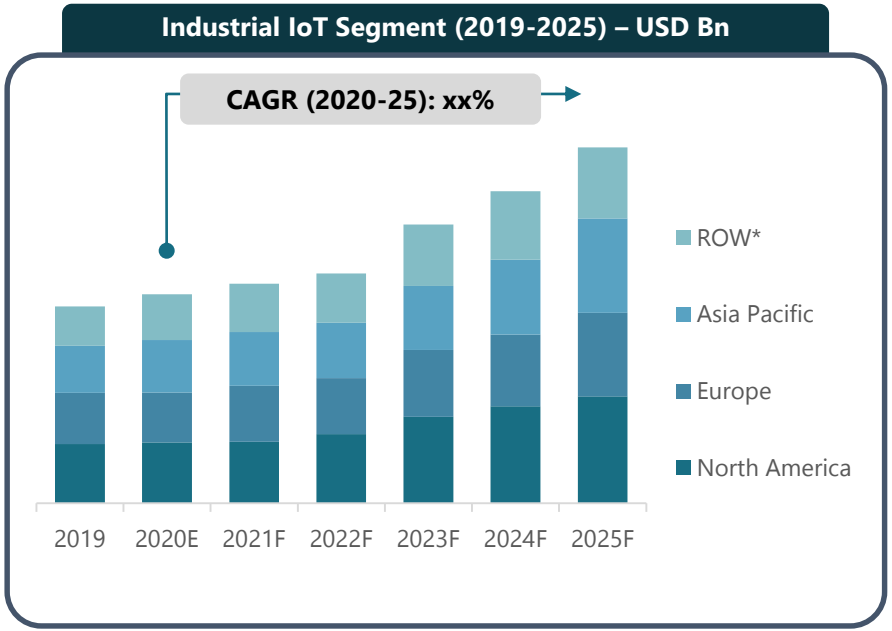
- In 2019, Industrial IoT, Artificial Intelligence, 3D printing and Collaborative Robots together contributed nearly xx% of the global smart manufacturing market
- Collaborative robots and automated guided vehicles and digital twins systems are likely to gain in share marginally by 2025

Global Market by Technology (2019-2025) – USD Bn



5.1 Assessment By Enabling Technology
5.1.1 *Industrial IoT (IIoT)*

Overview of Industrial IoT



- The global Industrial IIoT market is valued at USD xx Bn in 2019 and is
-
-
-
-
-

rising labor costs; favorable government initiatives; and investments by major IIoT companies

5.1 Enabling Technology
5.1.1 *Industrial IoT (IIoT)*

Overview of Industrial IoT

- IIoT market is estimated to account the largest share of the overall automotive market in 2020, contributing nearly
- The industrial IoT technology is anticipated to gain with steady demand for advancement in remote monitoring and application based operations arising from around the globe

Key End-use Markets

- Automotive
- Medical Devices
- Pharmaceuticals

Key Industrial IoT Suppliers

- The global industrial IoT market is consolidated and dominated by few major players including General Electric
- Predix OPM and APM in the mining domain to expand its footprint in South Africa and Australia

Key Suppliers

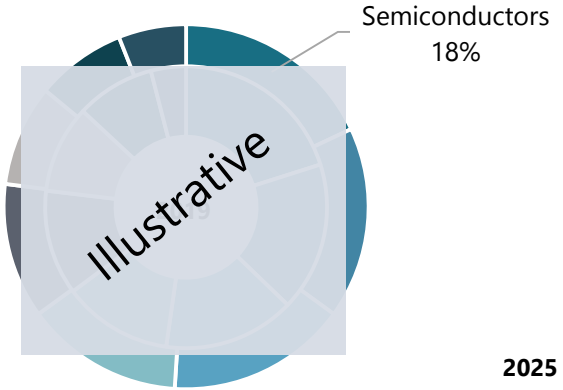
ABB
BOSCH
Rockwell Automation

Market Assessment by End-use Vertical

5.2 Smart Manufacturing Market Assessment by End-Use Vertical

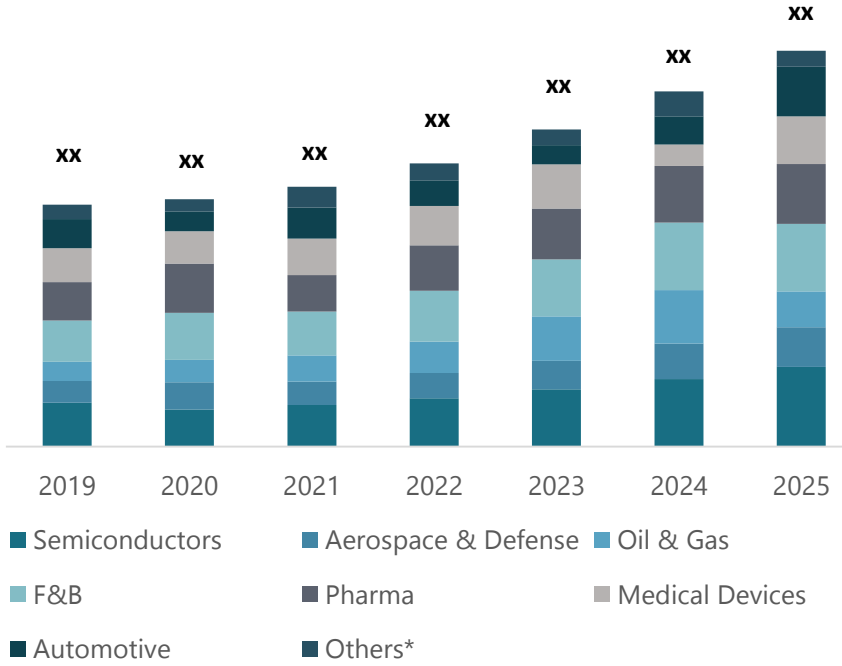
Smart Manufacturing Market Assessment By End Use Vertical

Global End-User Market Share by End Use (2019 and 2025)



- In 2019, Semiconductors/Electronics, Automotive and F&B and Pharma industries are expected to gain in market share for smart manufacturing solutions marginally from 2019 to 2025
- These two sectors will grow at a CAGR of xx%, xx% and xx% respectively for the forecasted years

Global End-User Market by End Use (2019-2025) – USD Bn



5.2 Smart Manufacturing Market by End-User

Smart Manufacturing By End Use

Electronics/ Semiconductors

- Electronics/ Semiconductors, Automotive, and Pharmaceuticals are the key sectors which have quickly gained market traction for C
- Th and b

Food & Beverages

- Re ain m ng in
- Re ng co

Pharmaceuticals

- Pl IN re b
- Th d s-related devices are driving the adoption of IoT technology in the industry

Market Assessment by Region

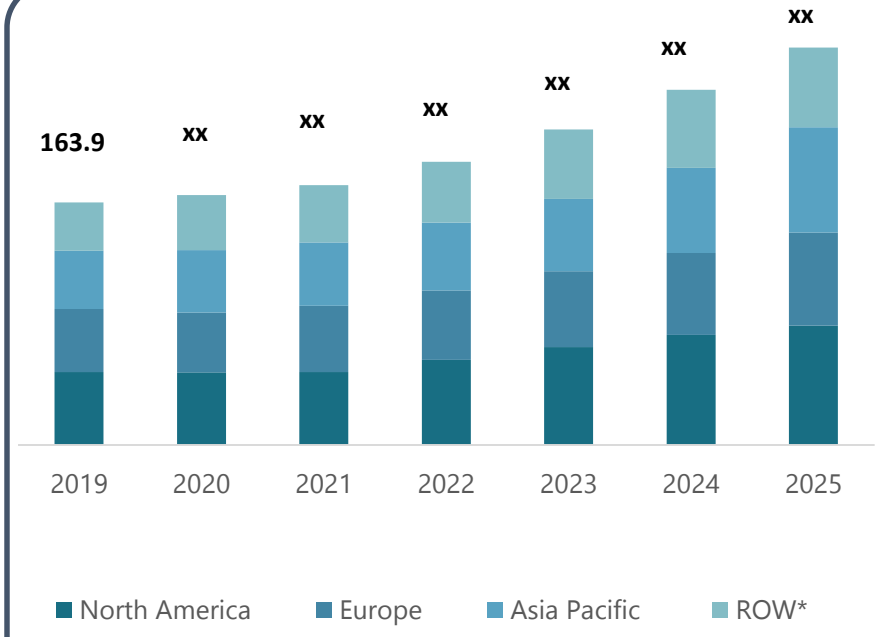
5.3 Smart Manufacturing Market Assessment by Region

Smart Manufacturing Market Assessment By Region

Global Market Share by Region (2019 and 2025)

- North America and Europe dominated the smart manufacturing market and more prominently in the areas of Artificial Intelligence, Industrial IoT and Collaborative Robots. They together contributed nearly xx% of the global market in 2019
- Asia Pacific is expected to witness the fastest growth during the forecast period. This region, being already a manufacturing hub, is witnessing growing investments in the areas of automation

Global Market by Region (2019-2025) – USD Bn



ROW*: Includes MENA & Africa

5.3. Smart Manufacturing Market by Region
5.3.1 *North America & Europe*

Overview of Smart Manufacturing By Region

North America
USD xx (2019)

Key end user verticals

- North America held the largest market share of USD xx Bn in 2019. It is further expected to grow at a CAGR xx% during 2020-
-
-

Europe
USD xx (2019)

Key end user verticals

-
-
- specially in aerospace and defense

ROW*: Includes MENA & Africa

Supplier Profiles

ABB Ltd.
Company Overview

Company Snapshot & Business Overview

Company Information	
Established	1968
Company Type	Public (ABBN)
Primary Industry	Semiconductors
Headquarters	Zürich, Switzerland
Country Presence	~100 Countries
# of Employees	~144,000 (2019)
Key Company Personnel	
CEO	Bjorn Rosengren
Business President (Industrial Automation)	Peter Terwiesch
Financial Information (2019)	
Total Revenue	USD 27,978 Mn
Operating Profit	USD 1,938 Mn
Net Profit	USD 1,528 Mn
Net Assets	USD 26,458 Mn

- **ABB Ltd.** is a global technology company engaged in the power and automation busi n, Indu 35 offic g artif
- ABB ol tech ry automation

Key Smart Manufacturing Products & Solutions

- Machine and Factory Automation business offers automation products and solutions suc ol sys
- Ro s, col e, Ele us aut
- Ind ve op re, motors and generators and Industrial Analytics and AI

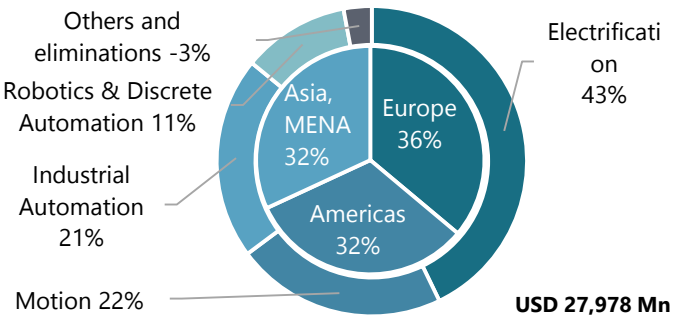
Note: Financial Year for ABB Ltd. ends on 31st December 2019

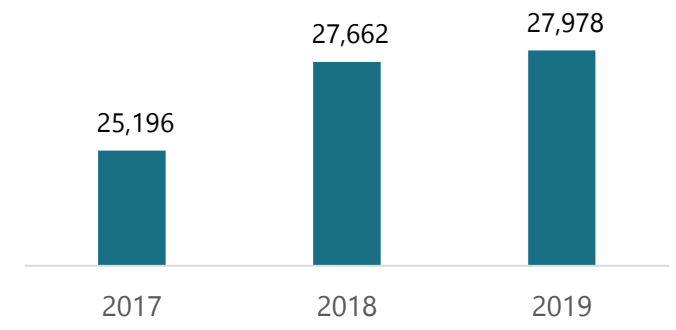
Source: Company Website, Annual Reports

ABB Ltd.
Company Overview

Financial Overview & Revenue Segmentation

ABB Ltd. Revenue 2019 Key segments





- ABB Ltd. [illegible] the
- The [illegible]
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- ABB [illegible]
- In t [illegible]
- The [illegible]

Discrete automation contributed 11% to the total

Note: Financial Year for ABB Ltd. ends on 31st December 2019

Source: Company Website, Annual Reports

ABB Ltd.
Key Developments

Key Developments

ABB is a key player in the Industrial Automation, Robotics & Discrete Automation market through its collaborative robots, Industrial robots and various equipment and accessories with a consistent growth in its revenues for the last few years. With the recent acquisitions and partnerships, ABB is expected to increase its service portfolio, thereby aiming to increase its revenue from smart manufacturing and digital transformation.

Recent Acquisition Activity

Acquisition of AB Rotech

- In 2018, ABB [illegible]
- [illegible] y,

Acquisition of GE Inc

- [illegible] trial
- It is expected to provide global industrial automation portfolio with a complementary offering in the world's mineral [illegible] rket

Product Development & Partnerships

Partnership with Accenture

- [illegible]
- [illegible] e

Partnerships for wireless automation

- [illegible] on
- [illegible]
- Both the partners established their joint vision for future flexible production with automation and wireless communication through a Memorandum of Understanding (MoU)

Source: Company Website, Annual Reports

Get in touch with us

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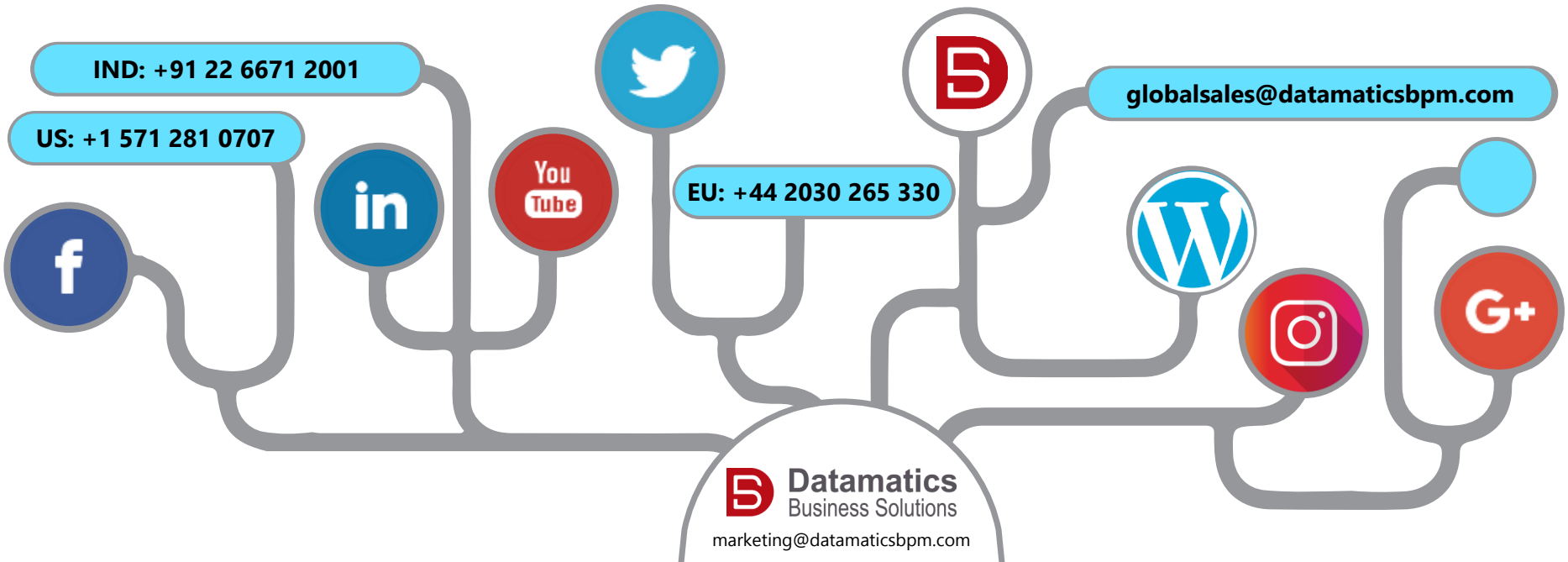
Thank You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