🇮🇳 भारत (INDIA)

Digital Transformation Insights

Manufacturing Industries

FY 2022-23 | 3rd Annual Edition

A Sparrow Research

Digital Transformation & Future of Indian Manufacturing

We are Sparrow!

Natural Extension of **1EHS** program

TABLE OF CONTENTS

METHODOLOGY

This report is based on the research of Indian companies in the manufacturing sector. We aim to predict how India's Digital Transformation journey can help organisations & individuals with future growth, career, certification trends, need for Manufacturing Execution Systems, Digital Transformation strategies, etc., in the Manufacturing Industry. This research is aimed to learn about existing business imperatives and the strategic role digital technology will play in manufacturing organisations and distribution networks,

We reached out to almost 750+ top executives of the Indian manufacturing companies. We gave our respondents the option to respond anonymously to express themselves as per their company's guidelines. Participation in the research was entirely voluntary, and all the responses have been kept confidential. No personally identifiable information has been used to draw inferences in this report.

CEO'S DESK

Pawan

CEO & Director
Sparrow Risk Management

"INNOVATION DISTINGUISHES BETWEEN A LEADER AND A FOLLOWER."

STEVE JOBS

The curiosity and innovation are the reason of our existence. History should remember us for the innovation that we brought in EHS and manufacturing excellence.

We are a story of hard-earned success and growth. It is not only our success, but also a success for all our stakeholders (Our Colleagues, Clients, Board & Ex-Colleagues)-their contribution is celestial. We, now, cater 300+ clients for services and technologies.

We are pleased to release our 3rd annual research insight; this is a natural extension of our flagship 1EHS program. In this release, our core focus was on "Digital Transformation" of Manufacturing sector in India. **The research team was mentored by industry leaders from different sectors.**

Manufacturing shall play the biggest impact on India's growth and shall be accelerated by Digitalization. We would like to be the one leading the sector in coming decades.

We have committed 7 resources, 3000+ man hours and most importantly the "Intent"! **Sparrow is the only Indian company** in this domain which commits and releases research of this scale for the community. We remain distinct by virtue of delivery, commitment, intent, and global orientation.

We aim to predict how India's Digital Transformation journey can help organisations & individuals.

We believe next decade is ours, new India shall rise, and we shall be delivering across globe as a country & community. **We need to tell the world – India is ready, India is the future.**

We as a company shall remain as innovative as possible and shall take risks beyond imagination in solving real world problems. **Our inner voice is clear – we wish to be innovators** for manufacturing with core focus on EHS, Operations, Reliability.

Enjoy reading and keep sharing.

TRENDS TO WATCH

Up to 1-5% Investment of Rev. in DX*

95%

Org. firmly believe Tech. is key to Net Zero Goals

India is up for Bionic DX - Human + Computers

85%

Leaders Believe Immediate up-skilling Required for Users/Employees

Data Acquisition is key Use Case

75%

Org. says DX Shall boost Job Creation

Lack of Skilled Workforce is Major Issue

<4% of Rev. in Digital Initiatives

65%

SaaS is most acceptable Cost Model

Struggling to Implement DX Strategy

55%

Data Security is a Major Obstacle

Tech. a Key in Net Zero Goals

45%

Organisations Plan for Advanced Analytics as Core Focus

35%

Up to 10% Growth via digitalization

25%

Org. shall increase the budget upto 50%

15%

Upto 13% growth via digitalization

5%

DX* - Digital Transformation

MEET OUR MENTORS
VALUABLE INSIGHTS GAINED

" Manufacturing industry has started picking up a lot on overall digitalization. Real value cases and brining them into life is something which industry has started looking into. Leadership and its vision is going to create remarkable difference…**read more**

ASHISH PANDEY
DIGITAL & TECH HEAD INDIA SUBCONTINENT || CIO || CDTO
GLAXOSMITHKLINE PHARMACEUTICALS LTD

Ashish Pandey is an industry veteran who has experience of working in multiple geographies. His guidance helped us gain insights into multiple dimensions of DX.

" For a successful Digital transformation, a leader acts as an "Enabler" who delivers end to end business requirement for a sole purpose of Customer Satisfaction and Business Growth. Taking a system perspective is critical for leaders, as DX is not limited to a single organisational function.…**read more** "

His mentorship provided us with a deep understanding & alignment of the manufacturing industries which was crucial for our project.

ATANU PRAMANIC
JOINT PRESIDENT & CIO
HINDALCO INDUSTRIES LTD.

VALUABLE INSIGHTS GAINED

" It's been a roller coaster journey for everyone involved in Digital Transformation, especially during the difficult times dictated by the pandemic. It began with a conserving mode and gradually grew into a storm of new technology adoption enabling business. After the tremendous volatility of 2020, some dust has settled in n....**read more "**

SHARAD KUMAR AGARWAL
CDIO
J.K TYRES & INDUSTRIES LTD.

His constant feedback at every stage of our project helped us refine our work to produce high quality research.

" Digital businesses need to focus on building deeper relationships with customers to stay relevant in this competitive realm. As the stiffness to create a market dominance in the digital space grows with every passing day, only a higher customer retention rate can help companies thrive on profitability....**read more "**

His vast knowledge and rich experience in the field of digital transformation enabled us to understand the role of leadership & skill.

SUDHAKAR SHIVASHANKAR
DIGITAL HEAD
CAVINKARE PVT. LTD.

" Digital transformation requires that the people, processes and technology within an organisation align with the desired end goal in order to achieve the greatest success. Additionally, these areas need to be set up to continuously improve ...**read more "**

VISHAL PATIL
GM- IT & AUTOMATION
SERUM INSTITUTE OF INDIA PVT. LTD.

Under his guidance, we were able to create our research roadmap which helped us visualize our objectives and prioritise our work accordingly.

The Team
BEHIND THE CURTAIN

SHRISTY PANDIT

Institute of Management
Technology, Ghaziabad

ARADHYA MEHRA

Institute of Management
Technology, Ghaziabad

SHUBHANGI VARMA

Institute of Management
Technology, Ghaziabad

SHUBHAM SHUKLA
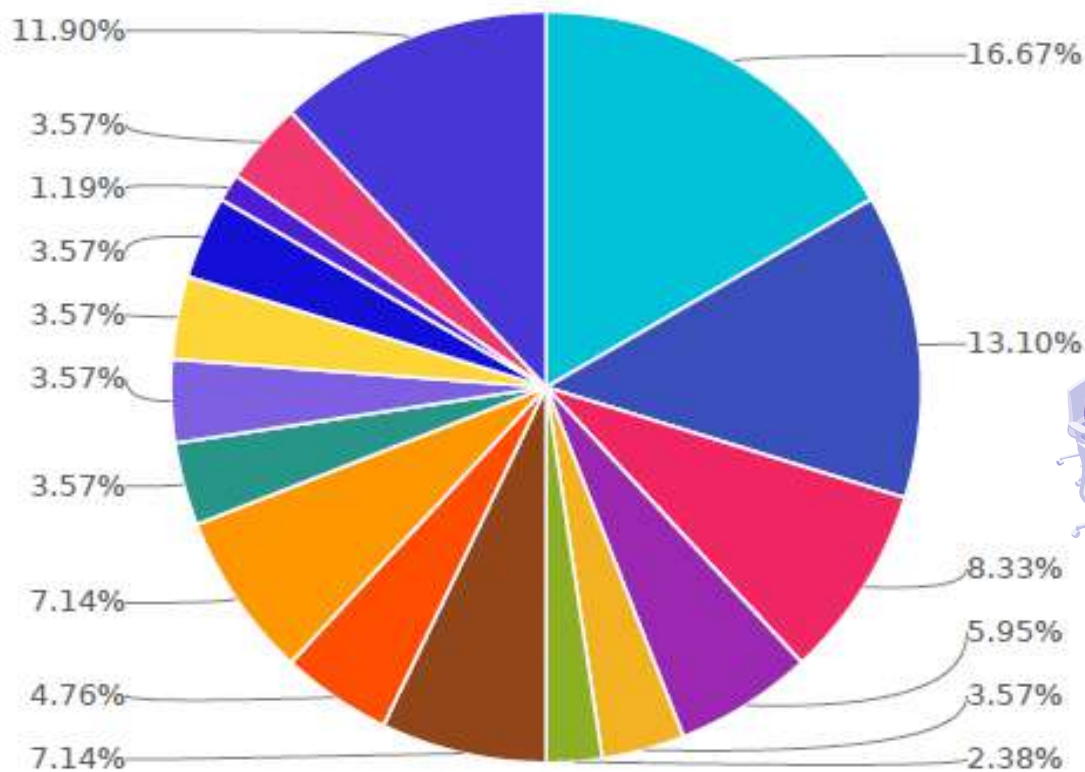
COO-Tech, Sparrow RMS

**RAJWARDHAN SINGH**

Sr. Manager, Sparrow RMS

TANYA AGARWAL

Manager, Sparrow RMS

We primarily collected data from the leaders of the following sectors:

Pie chart with the following values:
- 16.67%
- 13.10%
- 11.90%
- 8.33%
- 5.95%
- 3.57%
- 3.57%
- 3.57%
- 3.57%
- 3.57%
- 3.57%
- 2.38%
- 1.19%
- 4.76%
- 7.14%
- 7.14%

Legend:
- Automotive
- Cement
- Chemical
- Construction
- Consumer Healthcare
- Electronics
- Energy
- Engineering
- FMCG
- Gems, Jewellery
- Iron and Steel
- Mining
- Oil and Gas
- Pharmaceutical
- Retail
- Textile
- Other (Please specify)

INTRODUCTION
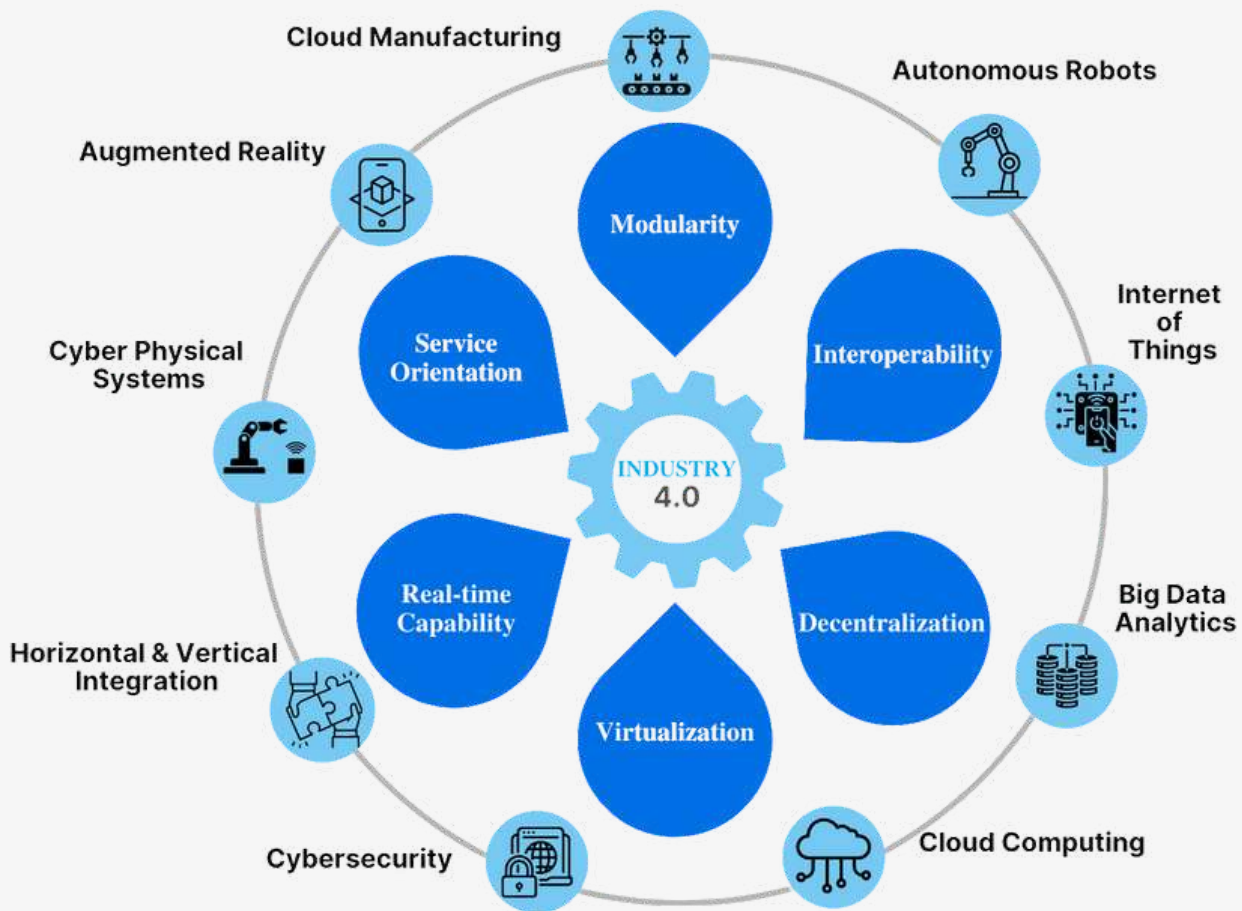
Digital transformation is gaining momentum in the Indian Industrial sector. Organisations are adding digital capabilities to their manufacturing processes. Industry 4.0 focuses on the end-to-end digitalization of all physical assets & processes.

A notable digital transformation is occurring behind the scenes of India's largest industrial organisations. Industry leaders are digitalising essential operations and procedures. They are adding digital capabilities to their manufacturing processes and investing in data analytics as a critical capability to generate innovation and substantial efficiency gains. India's industrial enterprises also intend to enhance their total degree of digitalization significantly.
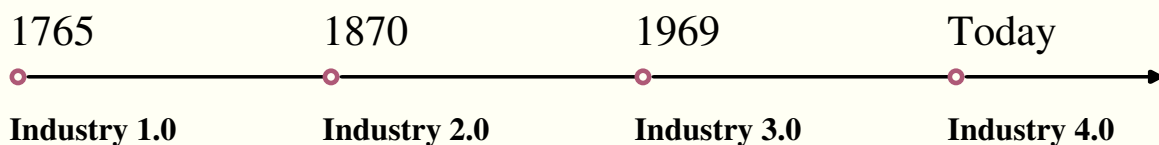
The phrase 'Industry 4.0' refers to the fourth industrial revolution. Industry 4.0 focuses on end-to-end digitisation of all physical assets and their integration into digital ecosystems with value chain partners. In contrast, Industry 3.0 focused on the automation of equipment and processes. The benefits promised by Industry 4.0, which connects a wide variety of new technologies to produce value, are based on the seamless generation, analysis, and communication of data.

Successful industrial firms will emerge from this change as truly digital organisations, with physical deliverables at their core, supplemented by digital interfaces and data-driven, creative services. These digital firms will collaborate with customers and suppliers in industrial digital ecosystems. These advancements will significantly impact individual businesses and market dynamics across various sectors. That is true in both established and emerging markets throughout the world.

EVOLUTION OF INDUSTRY 4.0

JOURNEY TO INDUSTRY 4.0

Industry 2.0
Discovery of electricity and assembly line production

Industry 4.0
Application of information and communication technologies to industry

Industry 1.0
Use of steam power and mechanization of production

Industry 3.0
Partial automation using memory-programmable controls and computers

1765	1870	1969	Today
Industry 1.0	**Industry 2.0**	**Industry 3.0**	**Industry 4.0**

We have always been reliant on technology throughout history. Of course, the technology of each century did not have the same shape and size as it has today, but it was undoubtedly interesting to look at the time.

People would constantly use the technology they had at their disposal to simplify their lives while also improving them and taking them to the next level. This is where the industrial revolution got its start. The world is currently undergoing the 4th industrial revolution, sometimes known as Industry 4.0. Here's some background on the three prior industrial revolutions that led up to today!

The Industrial Revolution saw a shift from an agricultural to a manufacturing economy, with goods created by machines rather than by hand. It resulted in increased production and efficiency, lower pricing, more commodities, higher earnings, and most importantly product innovation.

INDUSTRY 1.0

The late 18th to the early 19th centuries was the period of 1st Industrial revolution. Mechanization brought about significant changes in the industry. Agriculture was gradually displaced as the backbone of the social economy by the industry due to mechanization.
People saw tremendous coal extraction during the period and the significant discovery of the steam engine, which generated a new energy source that subsequently helped speed up railroad production, increasing the economy.

INDUSTRY 2.0

Assembly line production and utilisation of electricity ushered in the Second Industrial Revolution in the nineteenth century. Henry Ford (1863-1947) got the concept for mass production , it was a phase of rapid scientific discovery, standardisation, mass production, and industrialisation from the late 19th century into the early 20th century. These principles were carried over into vehicle manufacture by Henry Ford, who greatly transformed it.

Previously, an entire automobile was assembled at a single station. In this phase, vehicles started being produced in partial steps on a conveyor belt, which was substantially faster and less expensive.

INDUSTRY 3.0

Through memory-programmable controls and computers, the Third Industrial Revolution began in the 1970s. Industries could automate a whole production process - without the need for human intervention. Robots that followed pre-programmed instructions without human involvement were well-known examples.

INDUSTRY 4.0

Many individuals believe that Industry 4.0 is the Fourth Industrial Revolution. Industry 4.0 began with the one thing everyone uses every day-the Internet - at the turn of 2000s. The shift from the first industrial revolution, which was anchored on technical phenomena, to Industry 4.0, which generates virtual reality worlds and allows us to bend the laws of physics, can be seen.

The fourth Industrial Revolution will help in revolutionizing the world. Programs and projects are currently being launched to assist people using the fourth revolution's marvels even in their daily lives.

Leveraging Digital India for digital transformation to drive the manufacturing sector on AI, cloud computing, IoT, blockchains, and robotics can generate $1 trillion in economic value from the digital economy by 2025, up from $200 billion now.

The term "digital transformation" has gone from a boardroom buzzword to a vital strategic imperative, although the movement is still in its early stages. According to IDC, worldwide digital transformation investment will expand at a compound annual rate of 17.1%, reaching $2.3 trillion (53 percent of all ICT spending) by 2023. The United States will spend the most in the digital transformation arena, followed by Europe, China, and India.

The technological revolution of today contains tremendous potential, but it also poses new obstacles.

As we begin a new decade, it is evident that we are still a long way from realizing the full potential of technology to solve our most pressing problems.

Technology innovations have accelerated and grown exponentially in only the last few years. 90% percent of the world's data has been created in the previous two years; artificial intelligence can now detect more than 50 eye diseases better than a doctor; the world's first fully-electric aircraft completed a successful Virgin voyage, and 5G is no longer a distant future, but a reality in many countries.

In the age of digital globalization, India is remaking itself.

India is one of the largest and fastest-growing digital consumer marketplaces globally, with over 500 million internet users, but corporate adoption is unequal. Technology is set to transform practically every area of India's economy as digital capabilities develop and connection becomes more pervasive.

Key to success shall lie in preparing Digital Transformation Strategy at Corporate Level.
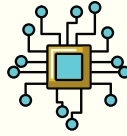
Videos, social networking, and gaming are thought to account for nearly 80% of all Internet traffic. By 2026, global data traffic will have increased from 230 exabytes in 2020 to 780 exabytes. By 2026, the global digital advertising and marketing market is estimated to reach $780 billion.

On the back of AI, cloud computing, IoT, blockchains, and robotics, Niti Aayog CEO Amitabh Kant asserted that leveraging Digital India for digital transformation to drive the manufacturing sector on the back of AI, cloud computing, IoT, blockchains, and robotics can generate $1 trillion in economic value from the digital economy by 2025, up from $200 billion now. The global digital economy, valued at $11.5 trillion in 2016, might now be worth $15 trillion. It is now time for India to seize this enormous global market potential, mainly because the world views India more favourably than China. Though the government is putting in additional effort, as indicated by the rise in mobile manufacture and other electronic devices, the expansion of internet network in every village, and robust software growth, looking ahead to the local and worldwide market in the subsequent years, the government at the federal and state levels, as well as industries, should synchronize their energies to capture the local and global market. Start-ups, unicorns, and R&D-focused businesses should be prioritized.
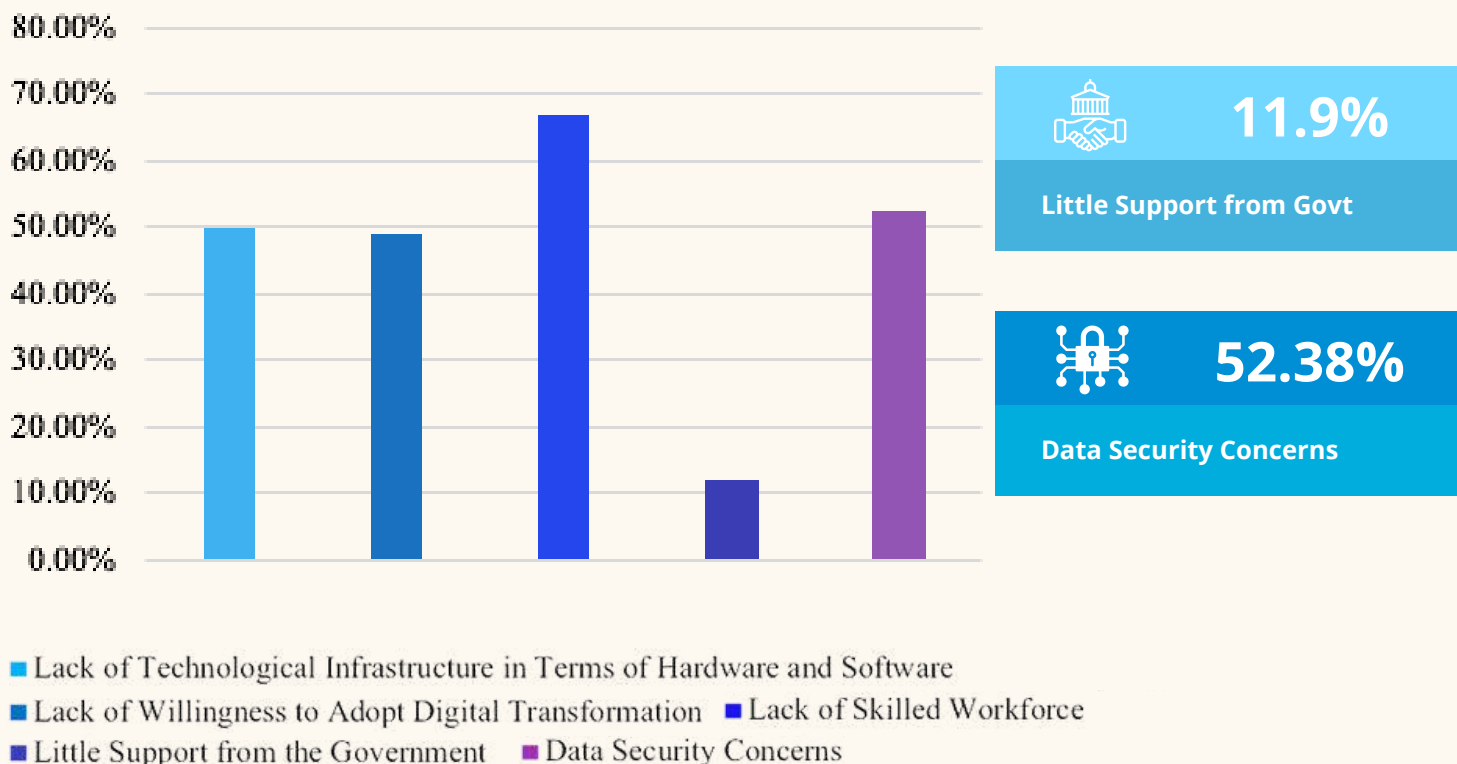
Current Mind Blocks, Status & Thought Process- India

In this section, we shall understand the current level of Digital Transformation and issues in adoption of Industry 4.0 in the Manufacturing Sector in India.

Problems encountered by Indian Manufacturing Industry while it transitions to Industry 4.0

Although there are multiple obstacles in transitioning to Industry 4.0, but according to **52.38%** of the industry leaders, **cyber security** remains the most pressing concern after **lack of skilled workforce.**

11.9%
Little Support from Govt

52.38%
Data Security Concerns

- Lack of Technological Infrastructure in Terms of Hardware and Software
- Lack of Willingness to Adopt Digital Transformation ■ Lack of Skilled Workforce
- Little Support from the Government ■ Data Security Concerns

Since there is a lack of a realistic risk profile, the organisations remain either indifferent to cybersecurity or remain in the state of fear from cyber breach. Many organisations' digital operations currently exist in silos, with a lack of a unified tactical approach to risk management, which steers performance, regulatory and organisational compliance management. Although the concerns about data security are legitimate, but they must be viewed in context.

According to a study, organisations with lower digital maturity reported 15% revenue growth, while companies **with better digital maturity recorded 45 percent revenue growth**. Given the positive association between digital transformation and revenue growth, every organisation aiming to generate greater value would benefit from implementing digitalization activities. In comparison, the annual data shows that the losses are minor in comparison to the **contd..**

# Problems encountered by Indian Manufacturing Industry while it transitions to Industry 4.0

contd.. type of top-line development that digitisation offers to businesses. Because businesses have control over data, digitalization in manufacturing is significantly safer. They can have their own cloud server, platform, and database, which can be leveraged for additional analytics and strategy improvement.

As a result, organisations must adopt a forward-thinking strategy, moving from a state of over-cautiousness to a state of awareness, and take proactive risk mitigation steps by adhering to global standards and using technology safeguards. Organisations should define and assign value to their digital assets, assign responsibilities, and conduct detailed risk assessments to bridge the cyber risk communication gap. Digital is increasingly changing the workplace and enabling previously

imagined levels of performance. Shortly, fully networked factories are expected to impact across industries. Widespread implementation of Digital Manufacturing, on the other hand, would present lots of new issues.

Data is a valuable asset, and its internal and external protection is of utmost importance for organisations. In our research, the **Automotive, Cement, Energy, and FMCG** sectors have put a serious concern on data security that hinders them from adopting Industry 4.0.

There is a trend primarily observed in the **Cement, Energy, and Textile** sectors where the leaders believe that Government seriously lacks in supporting the industry in transitioning towards Industry 4.0.

66.67%
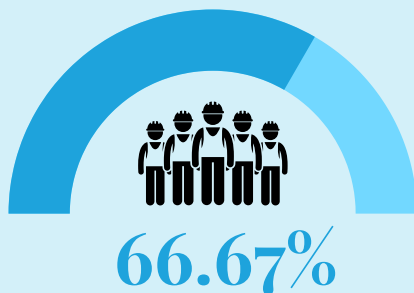
Leaders believe the biggest obstacle is the lack of a skilled workforce.

Will digital transformation play a key role in achieving Net Zero Carbon Emission targets?

Industry believes that the digital transformation will most likely play a key role (**specifically in FMCG, Chemical, Automotive and Cement sectors**) in achieving the Net Zero Carbon Emission targets the leaders set. Leaders in cement sector recognise the need for advancements in IT infrastructure and innovative technology to facilitate compliance with stringent emission standards & achieving carbon neutrality. More than 90% is positive on the trend.

Neutral
7.1%

Most Likely
47.6%%

Somewhat Likely
45.2%
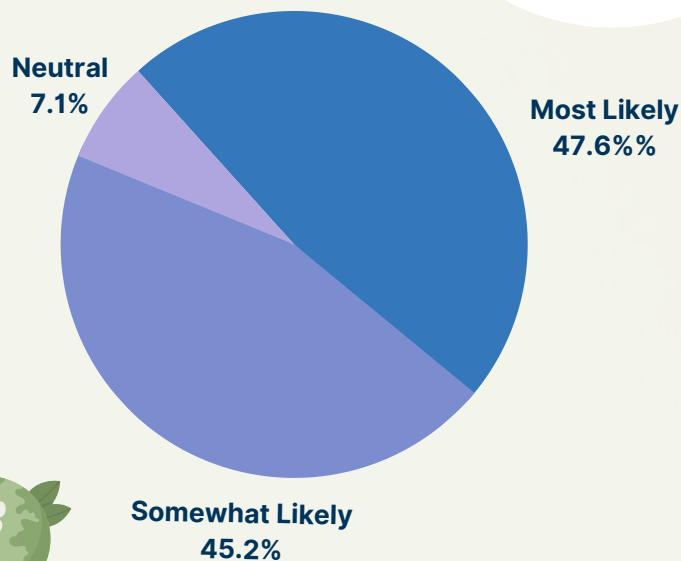
How will rapid digitalization affect creating new jobs in the Indian job market?

Remain the same
7.1%

Decrease
11.9%
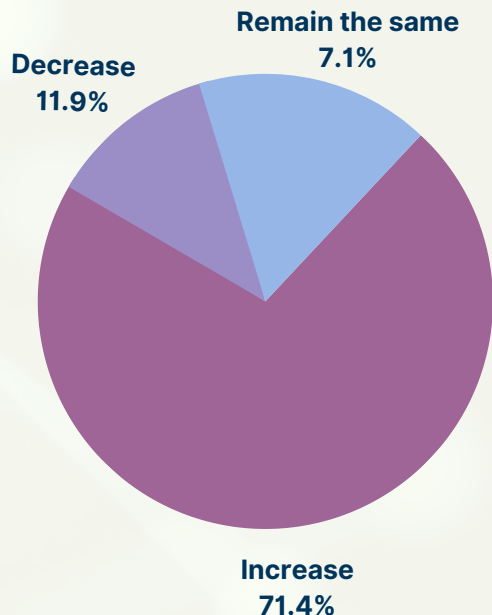
Increase
71.4%

Industry firmly believes that **rapid digitalization will increase the creation of new jobs** in the Indian job market. Although, in our research, **only 12% leaders** believe that new jobs will decrease in their sector. We observed the issue was awareness and unavailability of core DX strategy along with leadership communication.

Industries collaborate with tech partners across supply chains and ecosystems to decarbonise and innovate without increasing carbon emissions. Businesses shall utilise technology to understand the carbon footprint of their products and services throughout their whole value chain. Organisations may map, track, and visualise energy data to monitor and minimise consumption. They can utilise these insights to make the best design choices for zero-carbon in-built systems. Modern analytics shall also predict and link the production, raw material and supply chain variables to reduce the footprint.

Net Zero Carbon Emission targets

The carbon footprint of main manufacturing verticals accounts for 31% of overall emissions. Agriculture, logistics, and environmental control account for 19%, 16%, and 7%, respectively, of energy generation and distribution. According to industry-led research, using existing digital technologies across industries aggressively might help achieve roughly one-third of the reductions needed by 2030 to achieve a world average temperature well below 2°C.

Over 90% of leaders feel that DX will significantly impact the goal of achieving net-zero carbon emissions. Most organisations have begun to report data using digital technology, which is a positive starting step. However, companies still have a long way to go, and real-time effect can only be achieved if they go beyond electricity use to consider the carbon footprint of the products they use, and the processes they adopt across their supply chains. This will necessitate a considerable investment in data analytics solutions to pull together the information the company will need to meet ever-increasing reporting standards. Use cases must be developed that enable the creation of feedback loops for monitoring, analysing, and minimising GHG emissions. To optimise activities and reduce emissions, it is necessary to collect data on an unprecedented scale from all industries. To help businesses manage critical infrastructure assets more efficiently, increased investment in new connectivity and intelligent automation solutions is required.

Indian job market & Impact

Studies suggest that Digital Transformation in the Indian manufacturing sector may generate $1 trillion in economic value by 2025. Consumers, corporates, microenterprises, workers, the government, and other stakeholders could all benefit from the economic value India's Digital Transformation will create as it unfolds. DX attempts to optimise production and labour at the same time, resulting in increased revenue from the same human resource.

While some jobs will be displaced and others created due to digitalization, most employment will alter as machines assist humans in the workplace. This will necessitate a renewed focus on retraining. If the necessary training is provided, higher productivity and increased demand generated by DX may create newer job opportunities and employ more individuals. The immediate impact of productivity-boosting digital technologies is anticipated to generate 60-65 million jobs. At each stage of value development, new job possibilities will emerge.

Its impact will not be restricted to the IT industry alone; it will be felt across all three layers of digital solutions: problem identification, problem-solving, and solution implementation, which will necessitate workers from many sectors such as core engineering, research, marketing, fintech along with IT.

Is the Indian Manufacturing Industry more suited for fully autonomous production organisations or a bionic approach?

Entirely autonomous production organisations are fully automated and do not require human intervention on-site. These factories are thought to be able to operate "with the lights off." Although many industries are capable of producing in the dark, just a handful do so exclusively.

Fully Autonomous Production organisations
9.3%

Bionic (Human + Tech)
90.7%
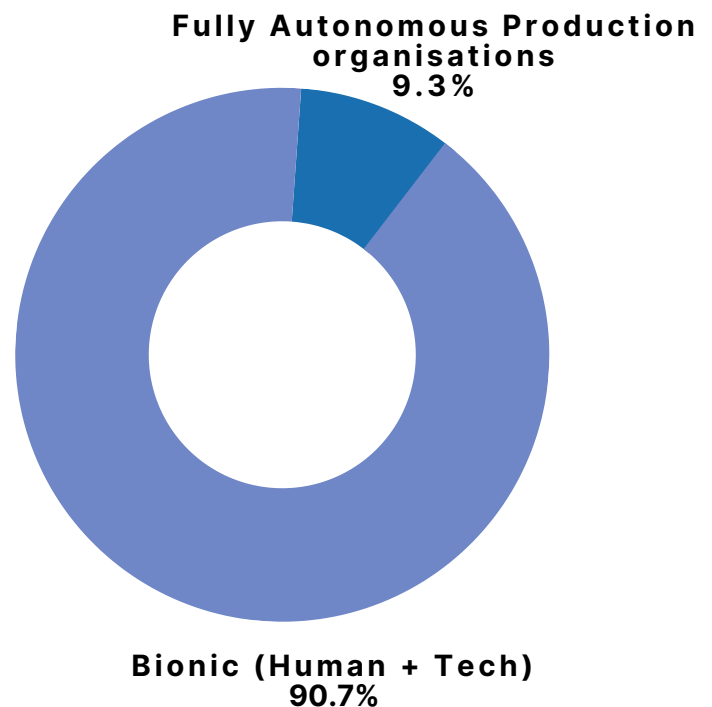
The leaders believe that current technology is still not developed enough where factories can operate without human intervention, and some crucial decisions are better left to the wisdom of humans who have a better understanding of dynamic problems.

The age of the Bionic organisation has arrived- thanks to technological advancements. The human-machine collaboration will result in better customer experiences and connections, more effective operations, and considerably higher rates of innovation for businesses.

90.7%

PREFER BIONIC
(HUMAN+TECHNOLOGY)
APPROACH

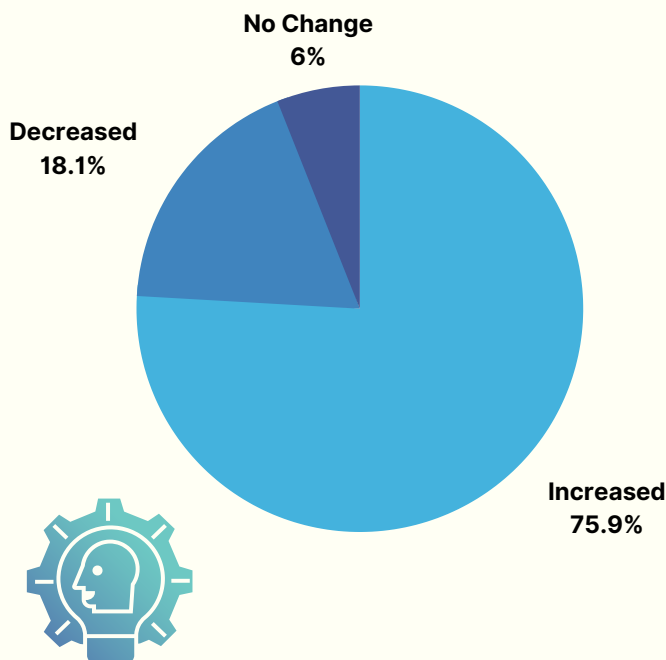# The role of smart devices and wearables in the manufacturing digitalization domain

The adoption of wearable technology is not limited to the consumer market. Its impact is becoming increasingly apparent in the industry too. The human worker still plays a critical role in delivering outcomes in the industry. With the proliferation of smart, connected devices, there are now more ways to equip workers to perform their jobs, enabling faster, safer, evidence-based decision-making and contributing toward greater business agility and collaboration.

Our research concludes that over **90%** of leaders believe that smart devices and wearables in manufacturing play a significant role, while 4.7% believe that it is insignificant. (majorly from chemical & FMCG sector)

Insignificant
4.82%

Extremely Critical
30.12%

Not Clear
2.41%

Significant Role
62.65%
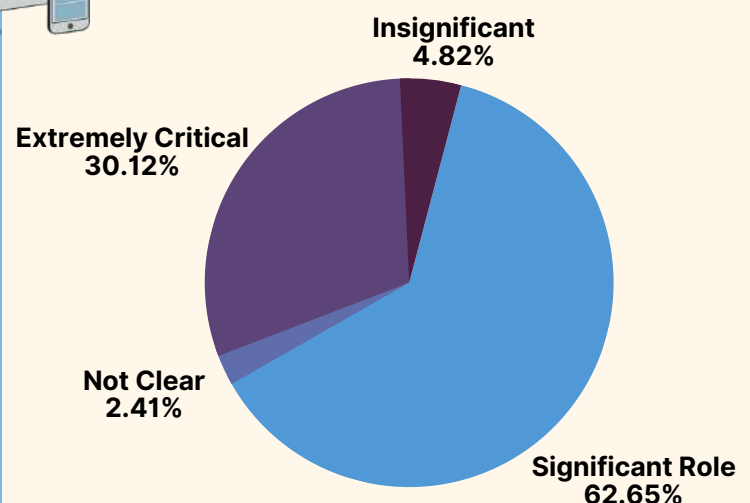
COVID-19 impact on the funding for digital/tech initiatives in India

No Change
6%

Decreased
18.1%

Increased
75.9%

75.9% of organisations from our research said that funding for digital/tech initiatives increased post COVID-19, while only **6%** reported no change.

How capable is the current industry in responding to similar catastrophes like COVID-19?

According to **76%** of leaders, we reached out to, believe the current industry is developing to respond to similar catastrophes, while **10.8%** believe that our industry is not prepared.

Developed
13.3%

Not Prepared
10.8%

Developing
75.9%
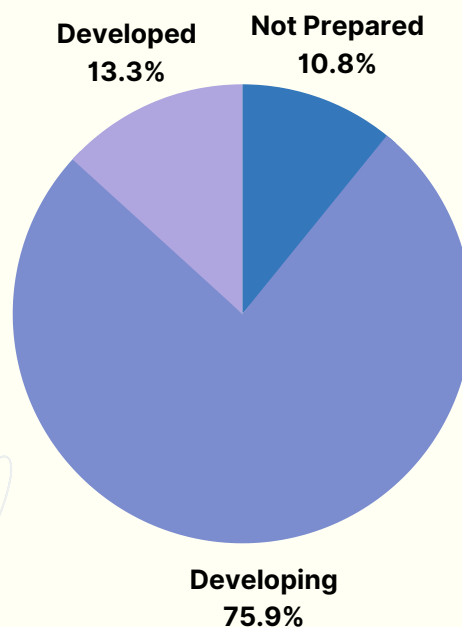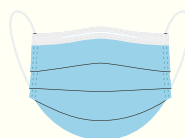
The COVID-19 epidemic has changed the way we live and work dramatically. We are at a critical juncture in history. Businesses were obliged to swiftly adapt and handle new issues to stay relevant as countries worldwide imposed city lockdowns and harsher border restrictions. Customers' touchpoints had to move from offline to online, and companies had to create a remote work environment and modify their supply networks.

Organisational Insights

In this section, we are gauging the current readiness of the Indian companies toward Digital Transformation.

What percent of revenue will the organisations invest in digital operation solutions in the future?
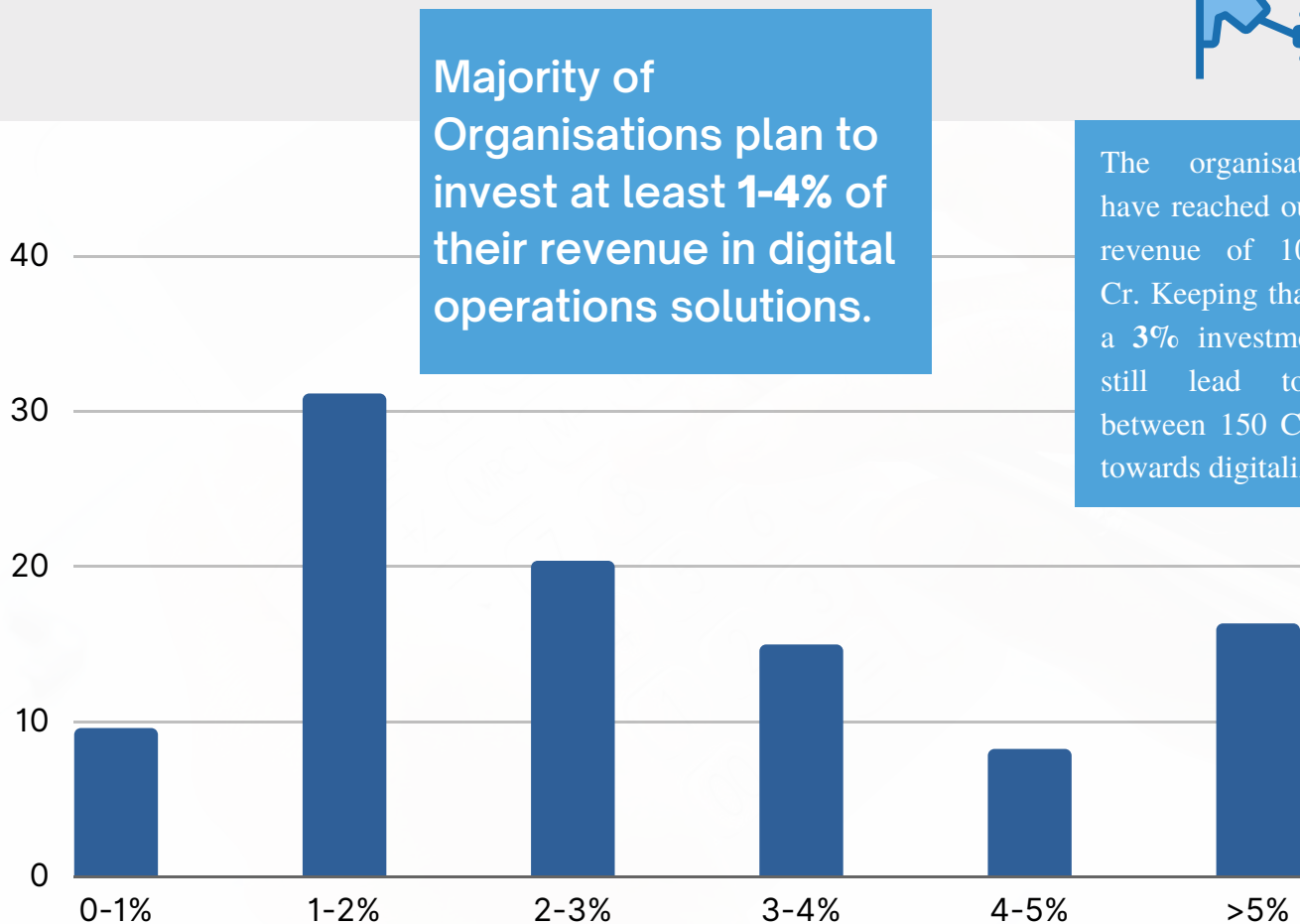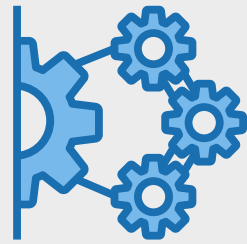
Majority of Organisations plan to invest at least 1-4% of their revenue in digital operations solutions.

The organisations we have reached out to, have revenue of 1000-5000+ Cr. Keeping that in mind, a **3%** investment would still lead to figures between 150 Cr per year towards digitalization.

|	
40	
30	
20	
10	
0	
	0-1% 1-2% 2-3% 3-4% 4-5% >5%

The scepticism associated with the unknowns vs. the legacy system which is already tried and tested has undoubtedly made securing funding for tech experiments and pilot initiatives more difficult, reinforcing the importance of solid business used cases. However, a solid rationale behind developing a business case being difficult isn't enough. Corporations that are hesitant to sign off on investments might be concerned about payback timelines.

The other major clarity the industry shall seek is what percentage of this fund goes to front end digital needs (towards customer) and what percentage goes to factory level & backend integration.

The current level of maturity of the organisation in terms of Digital Transformation

As per our research questionnaire findings, **59.7%** are currently on the intermediate level regarding Digital Transformation maturity, which is a good figure, while **22.6%** of organisations have already reached the advanced stage.
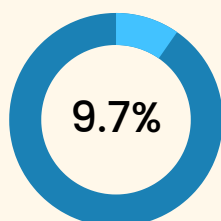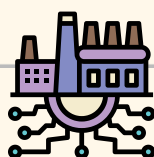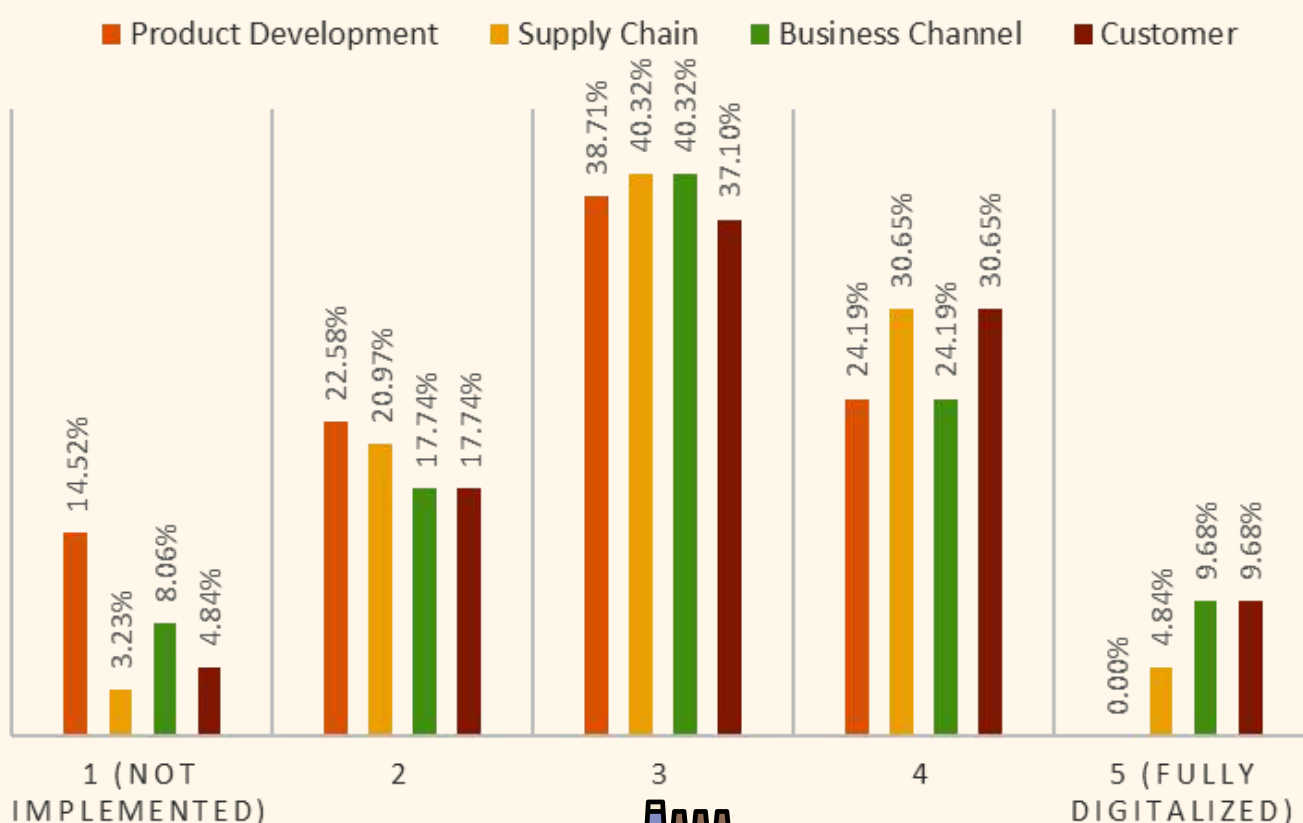

Advanced
22.6%

Beginner
17.7%

Intermediate
59.7%
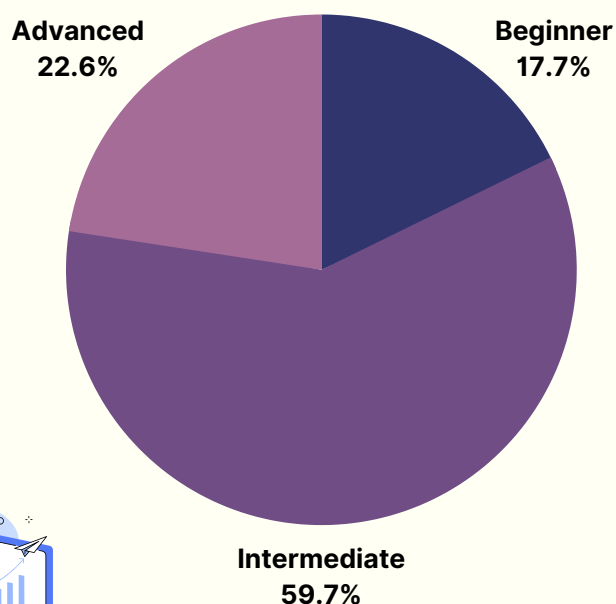
Percentage of the growth leaders attribute to the digital transformation initiatives

35.5% of organisations cited 5-10% growth because of DX strategies. The positive about these figures is that **12.9%** (**Cement sector** contributing the most) attributed to more than 20% growth.


>20%
12.9%

0-5%
25.8%

10-15%
25.8%

5-10%
35.5%
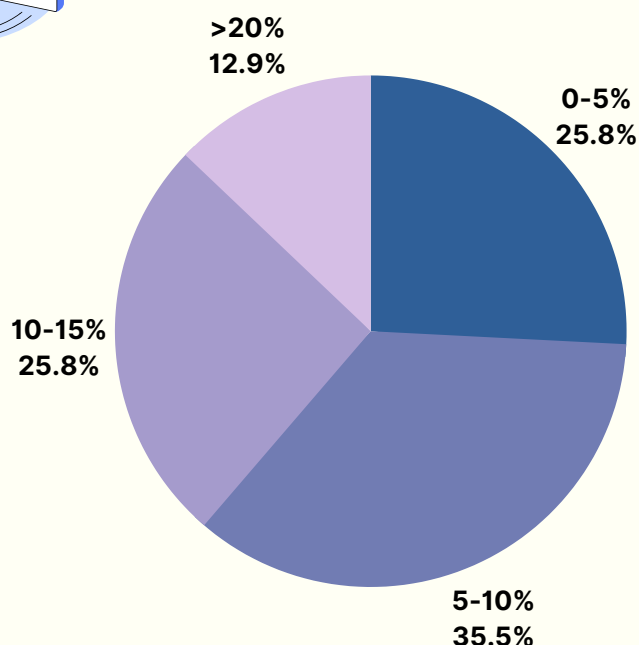
Characterizing the company's current degree of digitalization across various verticals

DEGREE OF DIGITALIZATION ACROSS VERTICALS

Legend: ■ Product Development ■ Supply Chain ■ Business Channel ■ Customer

	Product Development	Supply Chain	Business Channel	Customer
1 (NOT IMPLEMENTED)	14.52%	3.23%	8.06%	4.84%
2	22.58%	20.97%	17.74%	17.74%
3	38.71%	40.32%	40.32%	37.10%
4	24.19%	30.65%	24.19%	30.65%
5 (FULLY DIGITALIZED)	0.00%	4.84%	9.68%	9.68%

9.7%

In terms of the degree of digitalization, most efforts have been made in **Business Channel** and **Customers** to reach complete digitalization.

14.5%
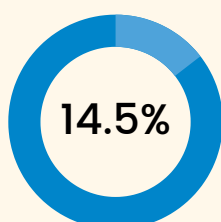
The least amount of effort is made into **Product Development** toward digitalization. The industries we have researched are mostly mass-production manufacturing industries in their maturity phase of the product cycle. Not much innovation is possible in creating raw materials and assessing impact. We believe we have a long path to cover.

Increment in the budget allocation regarding the current digitalization solutions level by 2027.

Our research indicates that **22.25%** of the organisations plan to **increase their current budget allocation towards digitalization by 40-50%**, which is a huge jump and will help India reach new heights in terms of Global Manufacturing.

Successfully implementing Industry 4.0 eliminates the need for industries to choose between improving their top or bottom lines. They can enhance both at the same time.

Implementing smart manufacturing efforts, such as integrated planning and scheduling for manufacturing, can help save money. Data from within the organisation—from sensors to enterprise resource planning (ERP) systems—is combined with information from horizontal value chain partners, such as inventory levels or changes in consumer demand in such scenarios. Asset utilisation and product throughput time are improved with integrated shop floor planning. Predictive maintenance of essential assets is another example, which employs predictive algorithms to optimise repair and maintenance schedules and increase asset uptime.
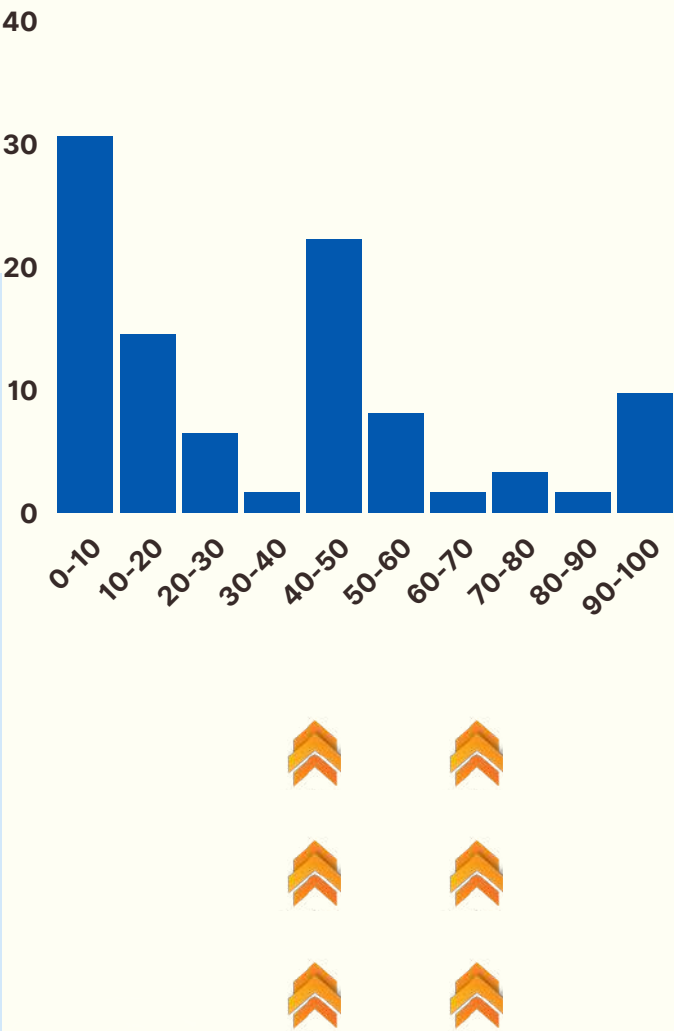
The DX maturity level of different verticals in the organisation
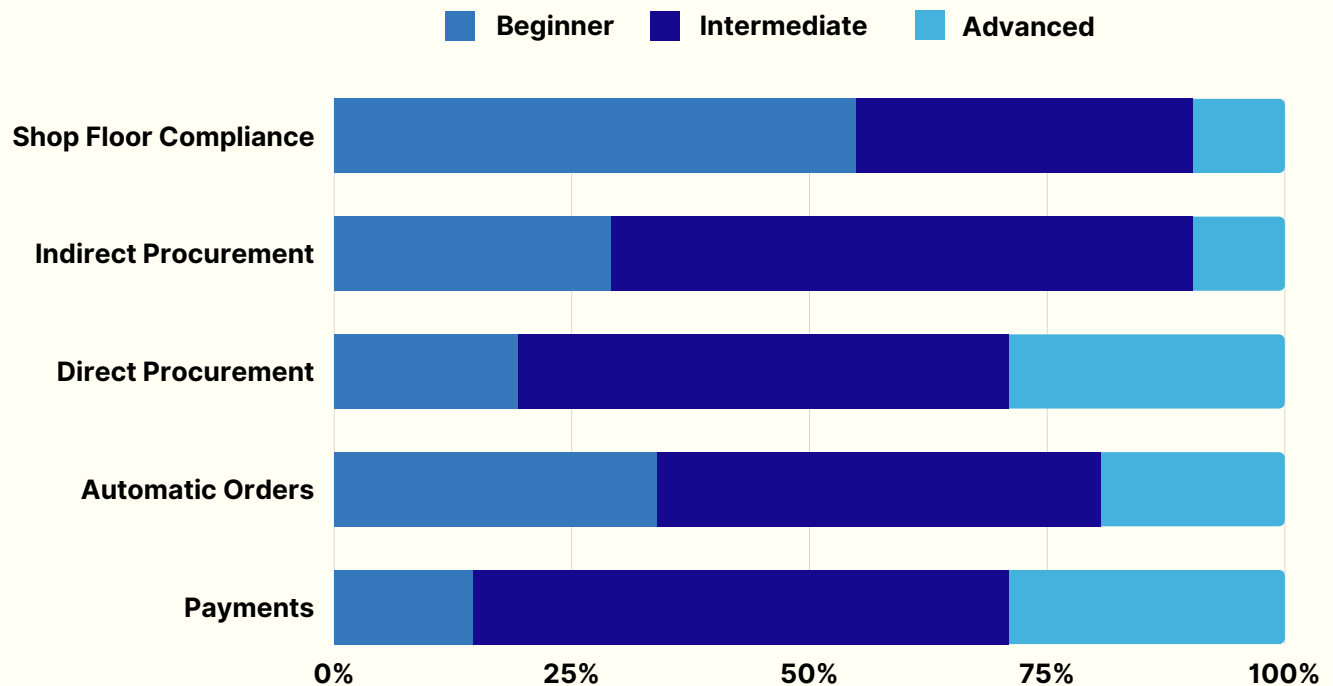
Almost 94% of Industries have on-going digital initiatives for multiple areas across the supply chain elements. Although they are at different stages in their Digital Transformation journey.

When it comes to beginner level, Shop Floor Compliance is still at a stage where many development and innovations need to happen. Our research shows **54.84%** of organisations still struggle to implement digital transformation.

Indirect Procurement is at an intermediate level with **61.29%** of organisations reporting that they need to develop ways to source goods and services essential for their operations.

Based on existing tech stacks, resources, and technologies- digital maturity is the capacity to adapt to or take advantage of market possibilities swiftly. To meet business goals, an organisation can embrace digital transformation not just in terms of technology but also across the board, encompassing people, culture, and processes.

Attempting to go forward with digital transformation without first determining your digital maturity level might lead to unforeseen hurdles, resulting in failure. Creating a digital maturity model without data-driven insights or a pulse on manual vs. digital processes, makes it difficult to determine which areas are most crucial in achieving transformative change.

# Different software solutions the organisation is currently investing in for transitioning towards DX
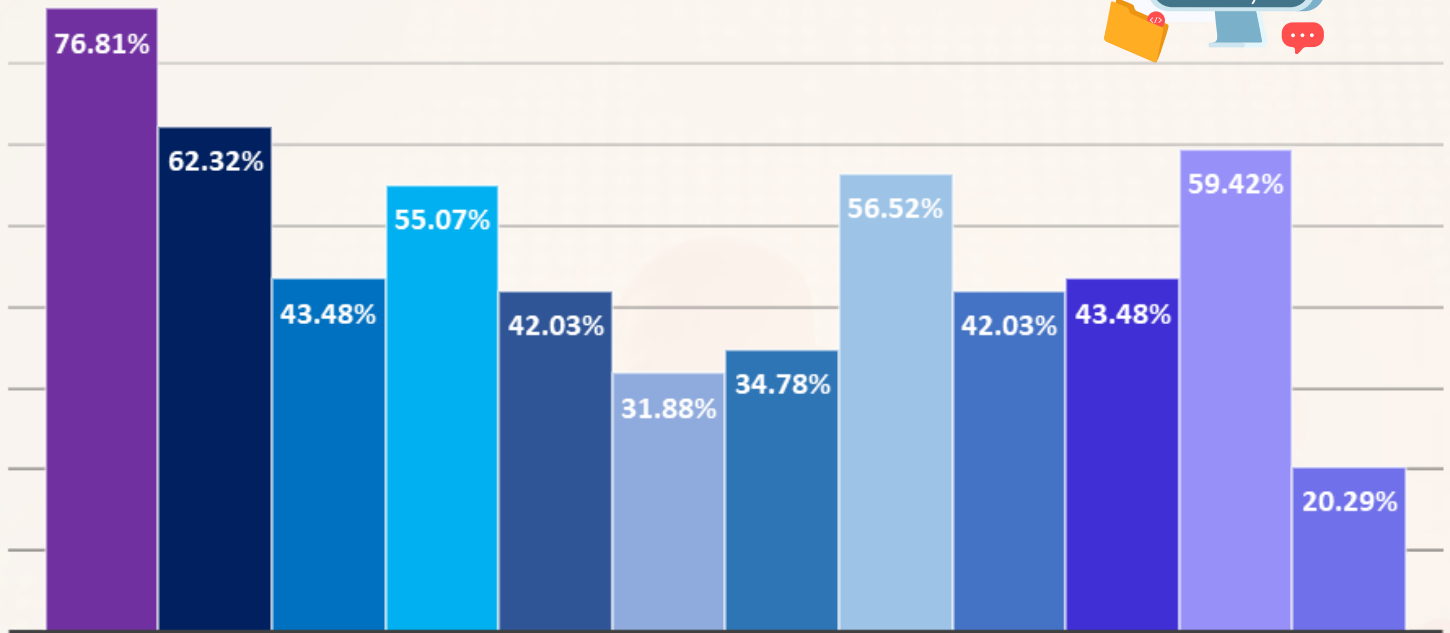
76.81% of organisations invest in ERP (Enterprise Resource Planning) Software as it helps them manage day-to-day business activities.

Communication between team members and verticals is fundamental to productivity and success. Yet only 20.29% of organisations in our research are currently investing in it.

- ERP Software
- CRM Software
- MES
- Manufacturing Resource Planning (MRP) Software
- Project Management Software
- Content Management System
- Marketing Automation Software
- Human Resource Management Software
- Enterprise Asset Management Software
- Enterprise Mobility Management Software
- Enterprise Business Intelligence Software
- Enterprise Internal Communication Management Software

Current elements of digital transformation - Adopted by Industries
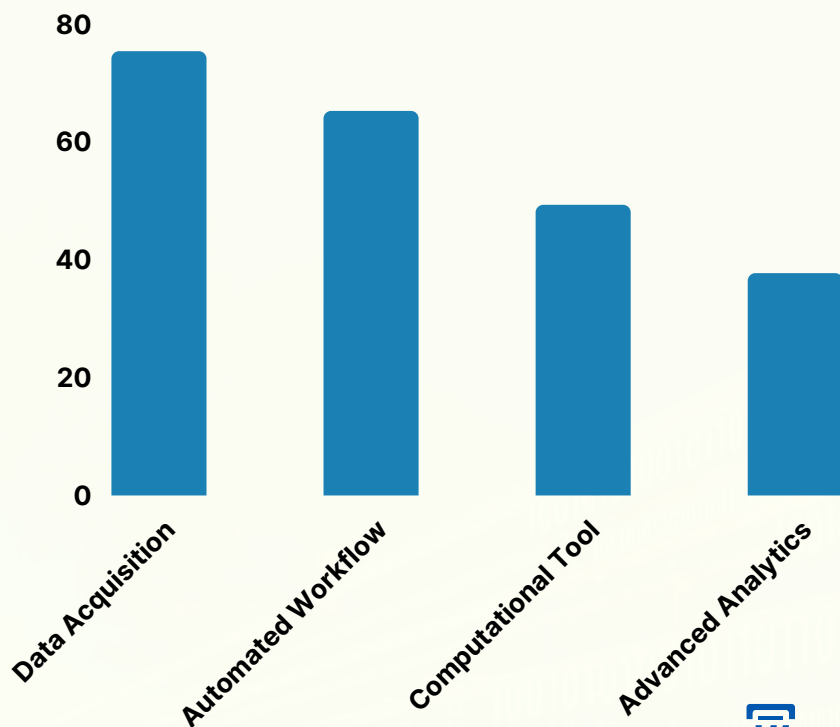
For Industries which are working towards digital transformation, the first choice is Data Acquisition. **75.36%** of them are already having some (partial or, just started) systems for Data Acquisition. Data acquisition provides greater control over an organisation's processes and faster response to failures that may occur.

More then 2/3rd of Industry leaders believes that advanced analytics should be the last priority for them.

# Elements of Industry 4.0 that the organisations have already implemented

To make Industry automation system intelligent and reliable, sensors are essential. In Industry 4.0, sensors achieves higher acceptance rates and benefit from a fully enabled connected and integrated system.

More than 65% of Industries are using multiple types of sensors for data collection, either in real time basis or in passive mode.
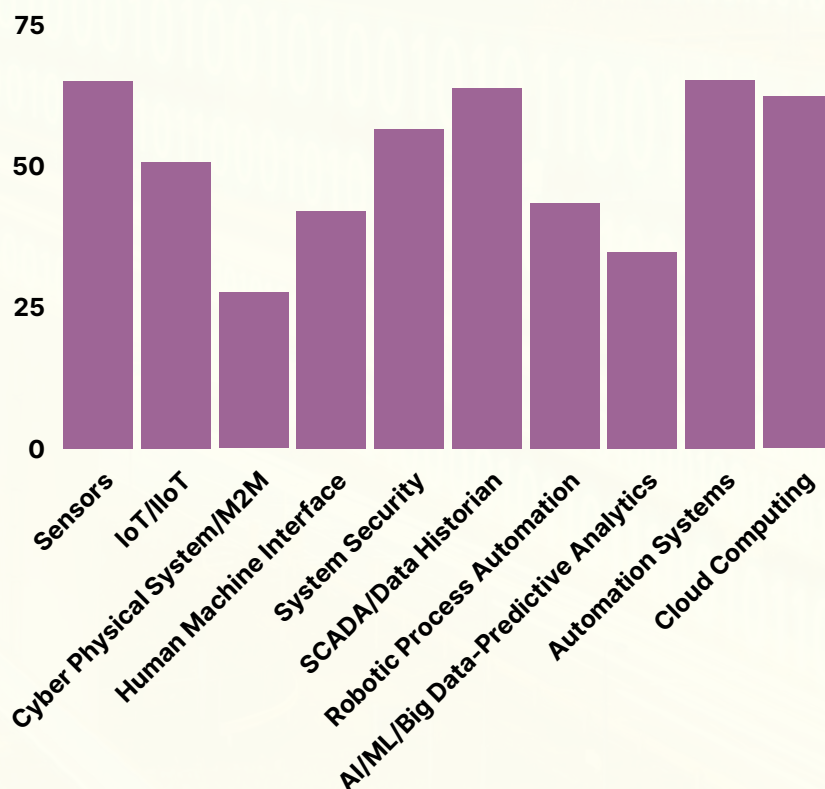
Areas that should be a part of DX strategy and their rank in order of priority.

Legend:
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- N/A
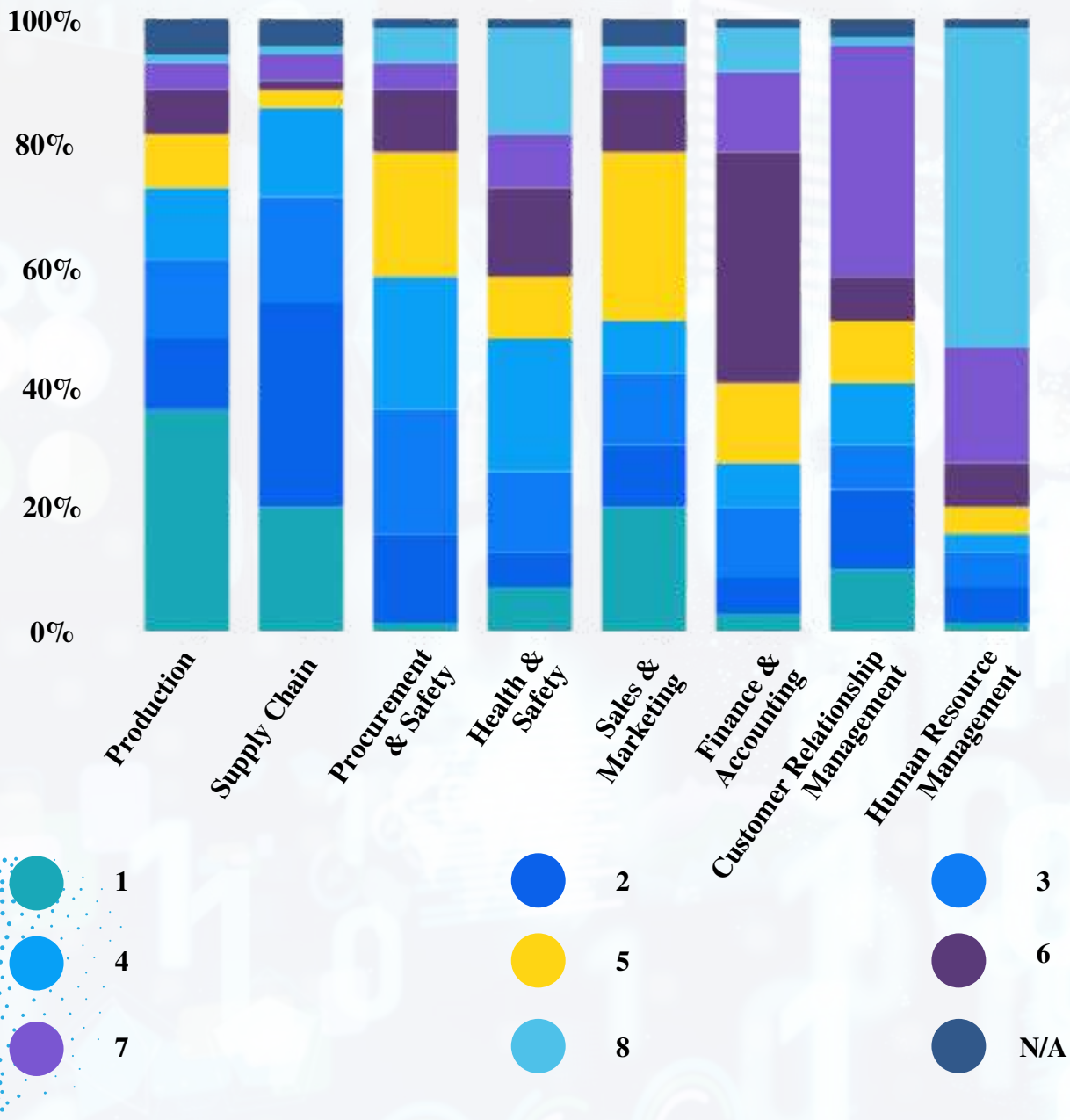
Industry leaders are using digital transformation and enhanced digital capabilities to design new or better ways of operating their businesses. The most important focus areas of digital transformation are the ones which yields profit or source of revenue. According to our research, more than half of Industry Leaders ranked Production and Supply chain (36.2% and 20.2% respectively) as their top priority. **HSE shall be tier 2 priority ranked 6th.**

Domains that should be a part of DX strategy and their rank in order of priority.

Choices	1	2	3	4	5	6	7	8	N/A
Production	36.23%	11.59%	13.04%	11.59%	8.70%	7.25%	4.35%	1.45%	5.80%
Supply Chain	20.29%	33.33%	17.39%	14.49%	2.90%	1.45%	4.35%	1.45%	4.35%
Procurement and Contracting	1.45%	14.49%	20.29%	21.74%	20.29%	10.14%	4.35%	5.80%	1.45%
Health & Safety	7.25%	5.80%	13.04%	21.74%	10.14%	14.49%	8.70%	17.39%	1.45%
Sales & Marketing	20.29%	10.14%	11.59%	8.70%	27.54%	10.14%	4.35%	2.90%	4.35%
Finance & Accounting	2.90%	5.80%	11.59%	7.25%	13.04%	37.68%	13.04%	7.25%	1.45%
Customer Relationship Management	10.14%	13.04%	7.25%	10.14%	10.14%	7.25%	37.68%	1.45%	2.90%
Human Resource Management	1.45%	5.80%	5.80%	2.90%	4.35%	7.25%	18.84%	52.17%	1.45%

Less than 25% of Industries have considered Health & Safety in their top 3 preferences of Digital Transformation strategy. Overall rank stands at 6th position. For Industry leaders, the core production and supply chain element is the top priority.

However, as the business environment shifts towards the digital side, all industries must leverage the emerging technologies to improve their EHS functionalities. With a blend of technology, the workplaces can be made more safer by managing risk, analytics-driven decisions and efficient resource utilization.

Ranking of the areas of business that are vulnerable to digital disruption

Legend		
1	2	3
4	5	6
7		
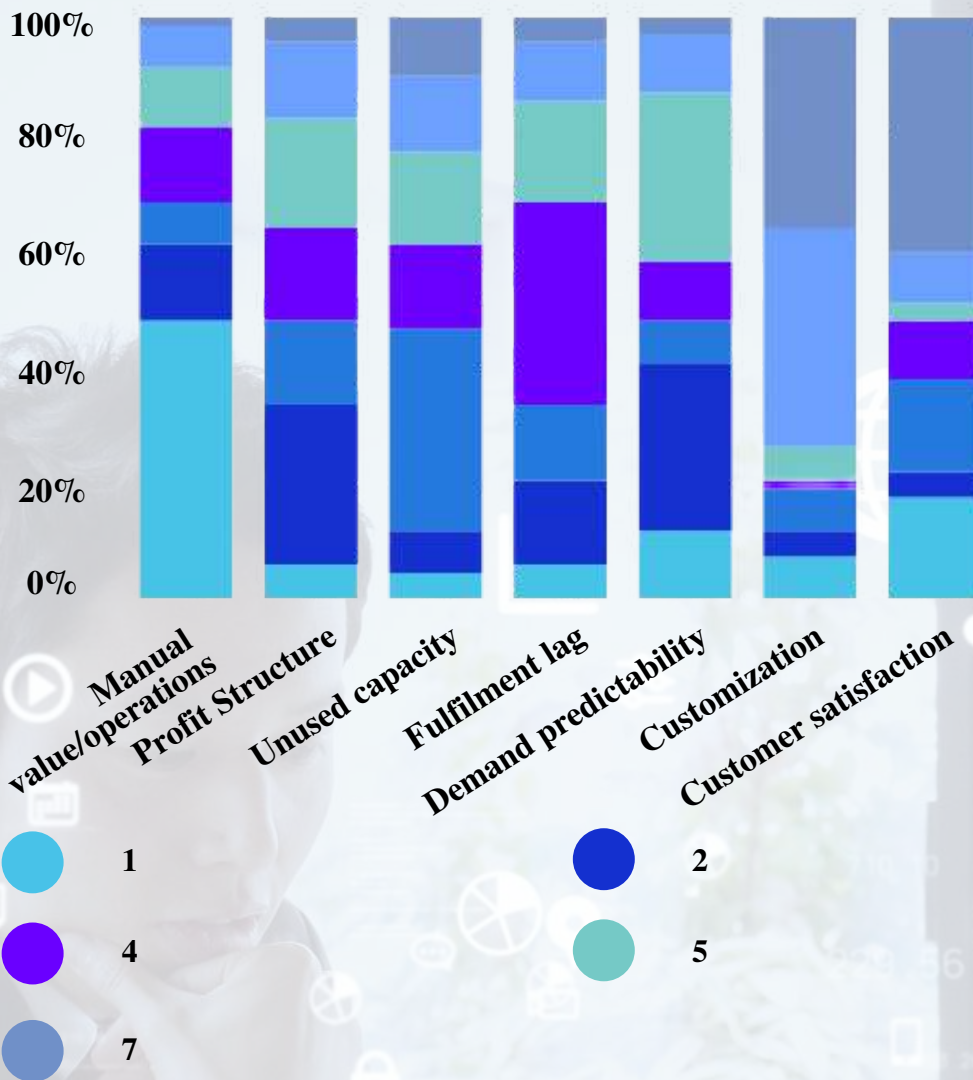
| CHOICES	RANK
Manual value/operations	1
Demand predictability	2
Profit Structure	3
Fulfilment lag	4
Unused Capacity	5
Customer satisfaction	6
Customization	7

As seen after March 2020, leaders now understand the areas of business that previously went unnoticed and that are vulnerable to digital disruption.

Choices	1	2	3	4	5	6	7	Score	Rank
Manual value/operations	47.83%	13.4%	7.25%	13.04%	10.14%	7.25%	1.45%	5.48	1
Customer satisfaction	17.39%	4.35%	15.94%	10.14%	2.90%	8.70%	40.58%	3.35	6
Demand predictability	11.59%	28.99%	7.25%	10.14%	28.99%	10.14%	2.90%	4.42	2
Customization	7.25%	4.35%	7.25%	1.45%	5.80%	37.68%	36.23%	2.48	7
Profit Structure	5.80%	27.54%	14.49%	15.94%	18.84%	13.04%	4.35%	4.29	3
Fulfilment lag	5.80%	14.49%	13.04%	34.78%	17.39%	10.14%	4.35%	4.09	4
Unused capacity	4.35%	7.25%	34.78%	14.49%	15.94%	13.04%	10.14%	3.90	5
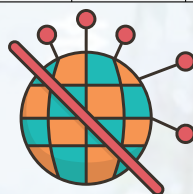
They ranked Manual value/operations (47.83%) as the most susceptible. This is in line with the fact that organisations are giving priority to production while framing their digital transformation strategies. According to the responses received from the industry leaders, demand predictability and profit structure seem to be the emerging fields which will be most impacted by the rapid digitalization of industries. Customisation, on the other hand, is considered the least vulnerable to digital disruption. Further, it's interesting to observe that while customer satisfaction was overall ranked lower in terms of vulnerability, it was given **rank 1** by **17.39%** of the industry leaders. For businesses to thrive, prioritising customer needs and satisfaction should be at the core of any digital transformation strategy. The objective should be to deliver maximum value to the end-user at the lowest possible price.

Licensing/Cost Model (CAPEX/OPEX or, MIX)
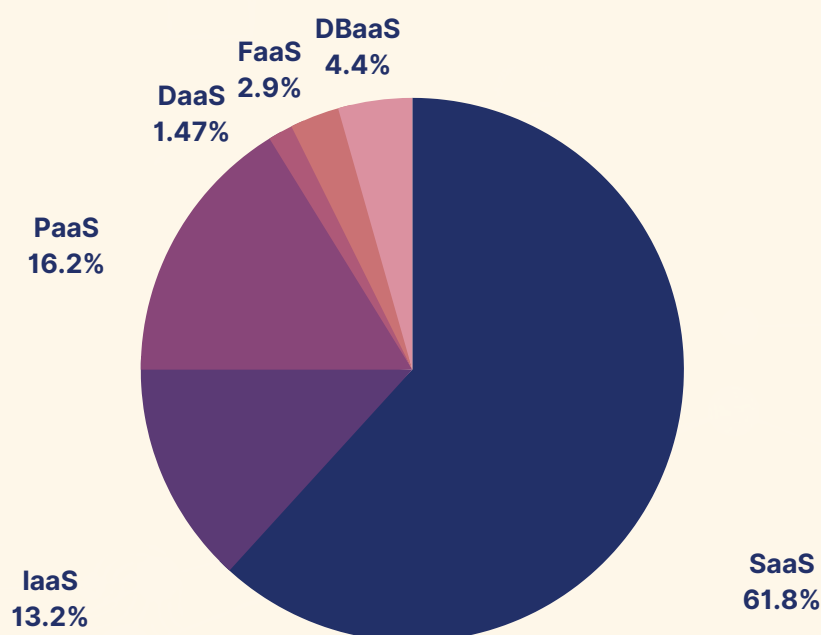
61.8%
PREFER SAAS

SaaS can provide notable savings for several different reasons. Majorly, it eliminates the upfront cost of purchase/installation, as well as on-going costs like maintenance and upgrades.

Instead of spending large amounts of money on hardware installations, SaaS applications can be easily maintained with minimal upfront cost.

SaaS (Software-as-a-Service) is a software-based service that consumers often access using a web browser. Everything, including applications, runtime, data, middleware, OSes, virtualization, servers, storage, and networking, may be controlled by a SaaS provider.

IaaS (Infrastructure-as-a-Service) merely offers a foundation (Virtual machine, Software Define Network, Storage attached). End users are responsible for configuring, managing, and deploying applications on the platform and environment. IaaS has a lot of capacity, but it needs many setups.

PaaS (Platform-as-a-Service) is a service that allows end-users to design, execute, and administer applications without having to worry about the infrastructure.

DaaS (Data-as-a-Service) is similar to SaaS and is, at times, considered a subset of SaaS. DaaS is an API returning some analytical data, e.g., currency exchange rates, sports results, or weather forecasts.

FaaS (Function-as-a-Service) is a platform that allows consumers to design, execute, and manage application capabilities without having to worry about the infrastructure.

Database as a Service (DBaaS) is a platform that hosts an organisation's database and offers backups, clustering, and high availability.

Operational and Data Security Concerns

In this section, we elaborates the most pressing concerns related to data and resources.
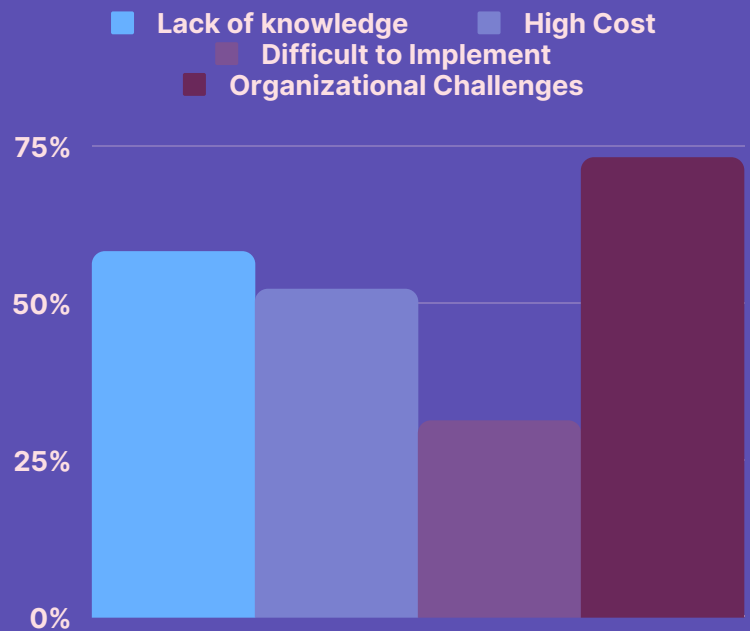
# Reasons for lesser willingness to adopt digital transformation

73.13%

organisational Challenges possess highest impact in lack of willingness in adoption of Digital Transformation.

Chart legend:
- **Lack of knowledge**
- **High Cost**
- **Difficult to Implement**
- **Organizational Challenges**

Chart values (y-axis): 0%, 25%, 50%, 75%

Digital transformation presents organisations with the opportunity to re-imagine the way their business is run through new digital processes and tools. However, as with any change management initiative, there are challenges businesses will face throughout the transformation processes, ranging from people-centric issues, financial problems, technical barriers, and everything in between.

However, organisations can overcome the problems by following the correct approach, long term vision and alignment of human skillset in line with the digital transformation roadmap.

Organisational Challenges for companies towards adoption of long-term DX vision
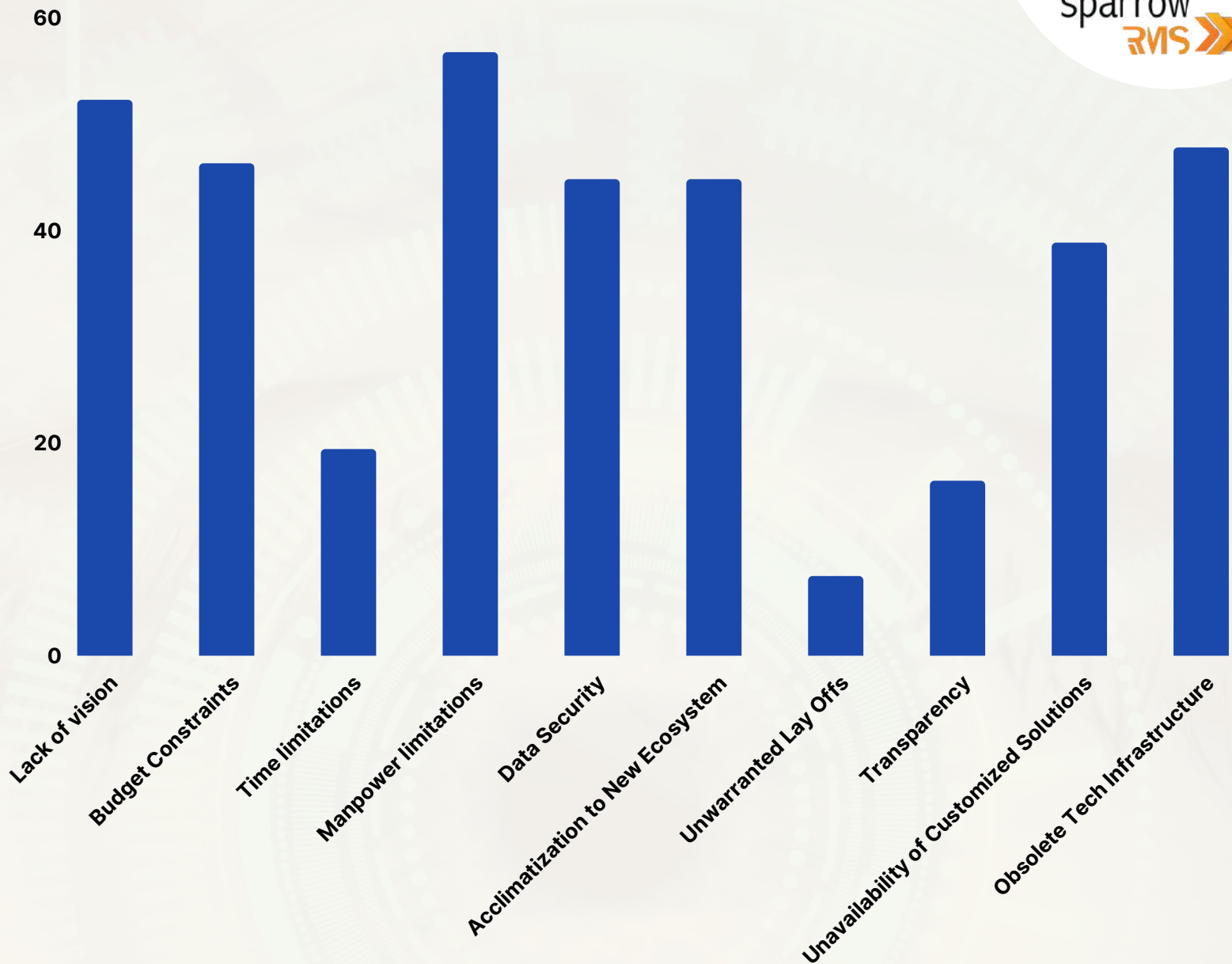
56.72% of the leaders believe that availability of skilled manpower is the major bottleneck for the Industries towards their journey of Digital Transformation.

This could be overcome by fostering a mindset or atmosphere of continuous self-improvement. Employee training (continued education, workplace training, reverse monitoring) with the development of new skills, particularly in technology, is something the organisations should focus on.

Data Security concerns – Key Elements
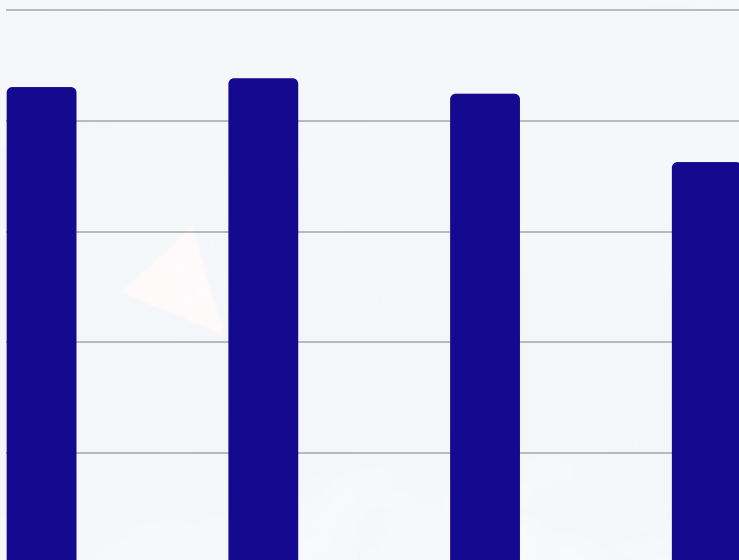
Misuse of data during sharing | **Intellectual Property Theft** | **Data Comprise** | **Cyber Attacks**

IBM SECURITY SURVEY

Nowadays data security is a top priority - the risk of not securing data is simply too high.

Around **65%** of Indian industrial enterprises believe that operational disruptions caused by cyber security breaches are the most severe risk.

A recent study* found that data breaches now costs companies $4.24 million per incident on average - the highest cost in the 17-year history of the report. In India, the average cost of a data breach was INR 16.5 crore in 2021, an increase of nearly 18% from 2020.
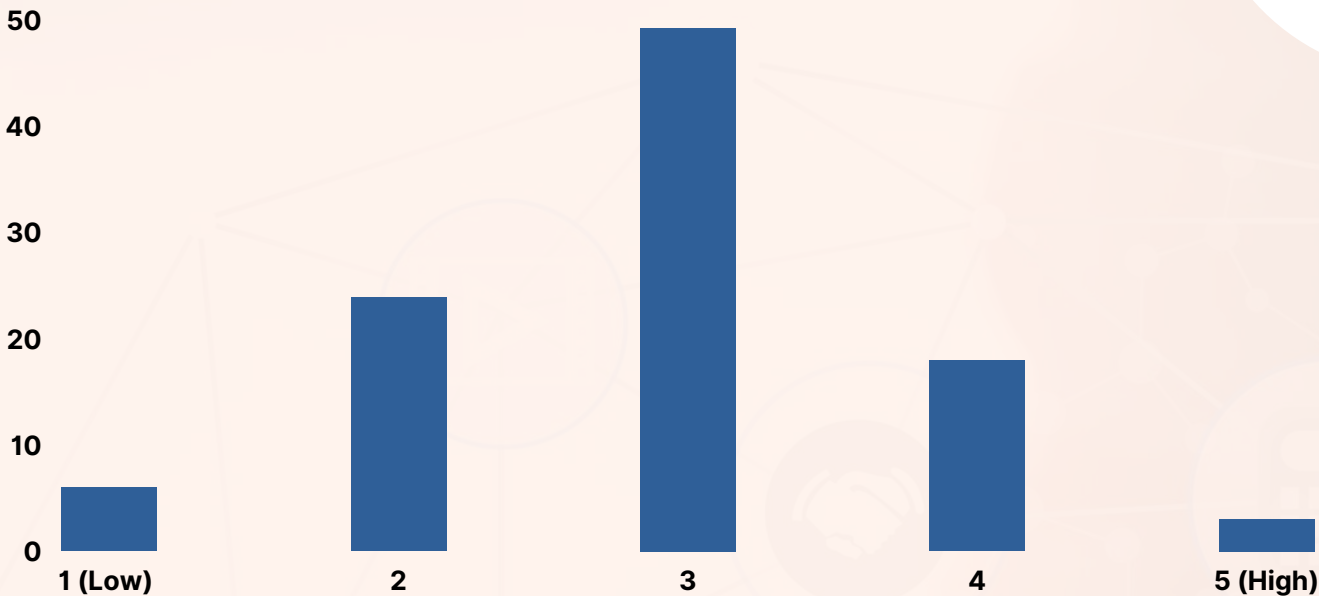
A well built Data-security strategy provides differentiated protection of the industry's information assets, giving the most important data the highest degree of protection.

Skill Level

This section comprises insights related to digital literacy in the industry.
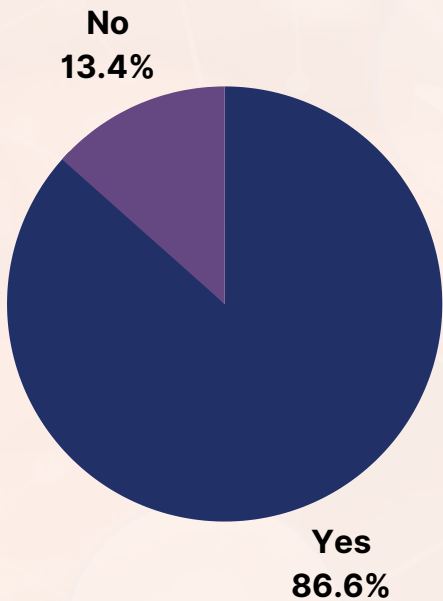
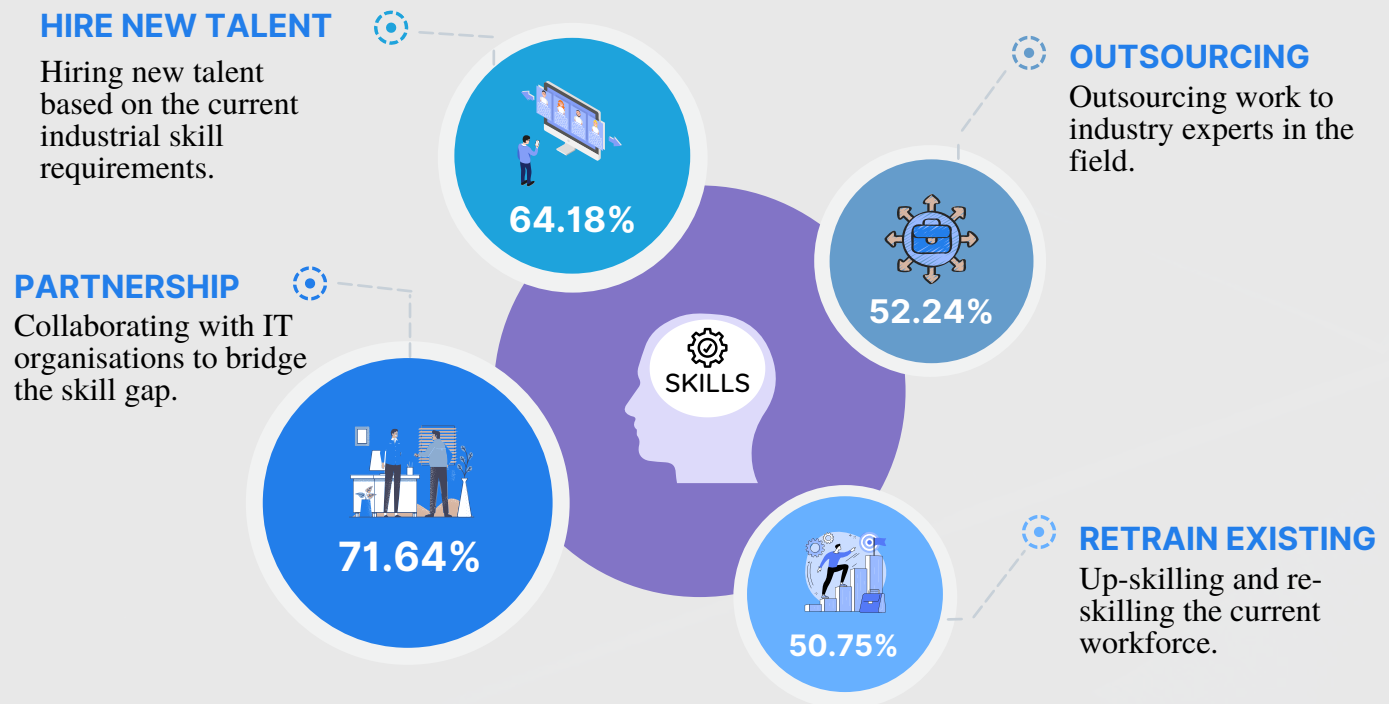# Current digital literacy level in the organisations

Just 20% of Industry leaders rated more then 3 out of 5 on current digital literacy level. To achieve the DX vision, digital literacy plays vital role. Industries must focus on developing digital skillset of employees and introduce them towards the digital transformation.

Is there a need for a radical change in the current skill enhancement programs/certifications to cater the demands of digital era?

Organisations must increasingly combine their digital abilities with operational knowledge. When digital talents are joined with a thorough grasp of the business, the true potential of digital skills is achieved. The actual value of data analytics, for example, is determined by an organisation's capacity to operationalise its findings. This necessitates data expertise, strategic and creative thinking, cooperation, and communication abilities. As a result, there is an increasing demand for people with technical skills, business strategy, and leadership talents.

No
13.4%

Yes
86.6%

Way forward to fill talent gap for adoption of digital transformation

HIRE NEW TALENT
Hiring new talent based on the current industrial skill requirements.

64.18%

OUTSOURCING
Outsourcing work to industry experts in the field.

52.24%

PARTNERSHIP
Collaborating with IT organisations to bridge the skill gap.

71.64%

SKILLS

RETRAIN EXISTING
Up-skilling and re-skilling the current workforce.

50.75%

organisations are under enormous pressure to scale up their digital talents due to the growing demand and limited supply of digital talent. To address the digital skills gap, we believe organisations should launch digital tool training programs, look at novel recruitment approaches, make targeted acquisitions, form alliances, and connect with the startup community.

Around **78%** of the leaders said that they are considering partnership as an option to fill the talent gap for the adoption of DX. Partnerships allow businesses to benefit from the digital knowledge of other companies. Companies can use best-in-class personnel or services as part of these agreements to help them with their digital ambitions.

Expectations

Here, we extract the opinions of industry leaders on the advantages of implementing digital strategy in their business models.

Areas the leaders believe the industry will benefit from embracing digital manufacturing

85.07% of Industry leaders believe that the manufacturing industry will gain the most from embracing Real-Time, On-Demand Information and Increasing Cost Efficiency.
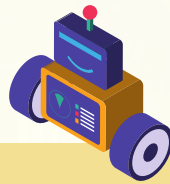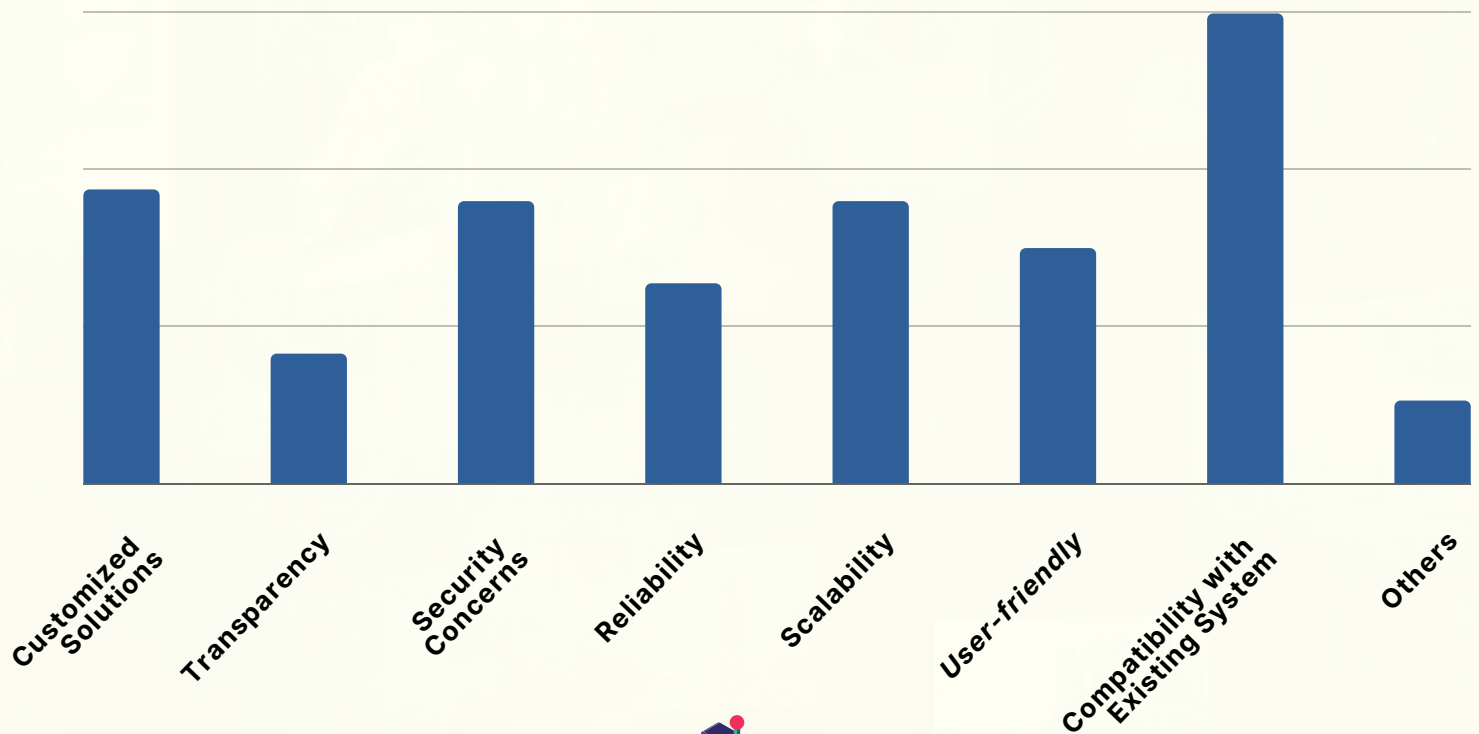

- ■ Real-Time, On-Demand Information
- ■ Advanced Analytics Capabilities
- ■ End-to -End Integration Across Value Chains
- ■ Reduce Wastage
- ■ Increase Cost Efficiency
- ■ Standardize Products and QA Programs
- ■ Improve Customer Satisfaction
- ■ Better Talent Acquisition and Retention
- ■ Increase Business Momentum and Agility
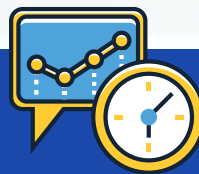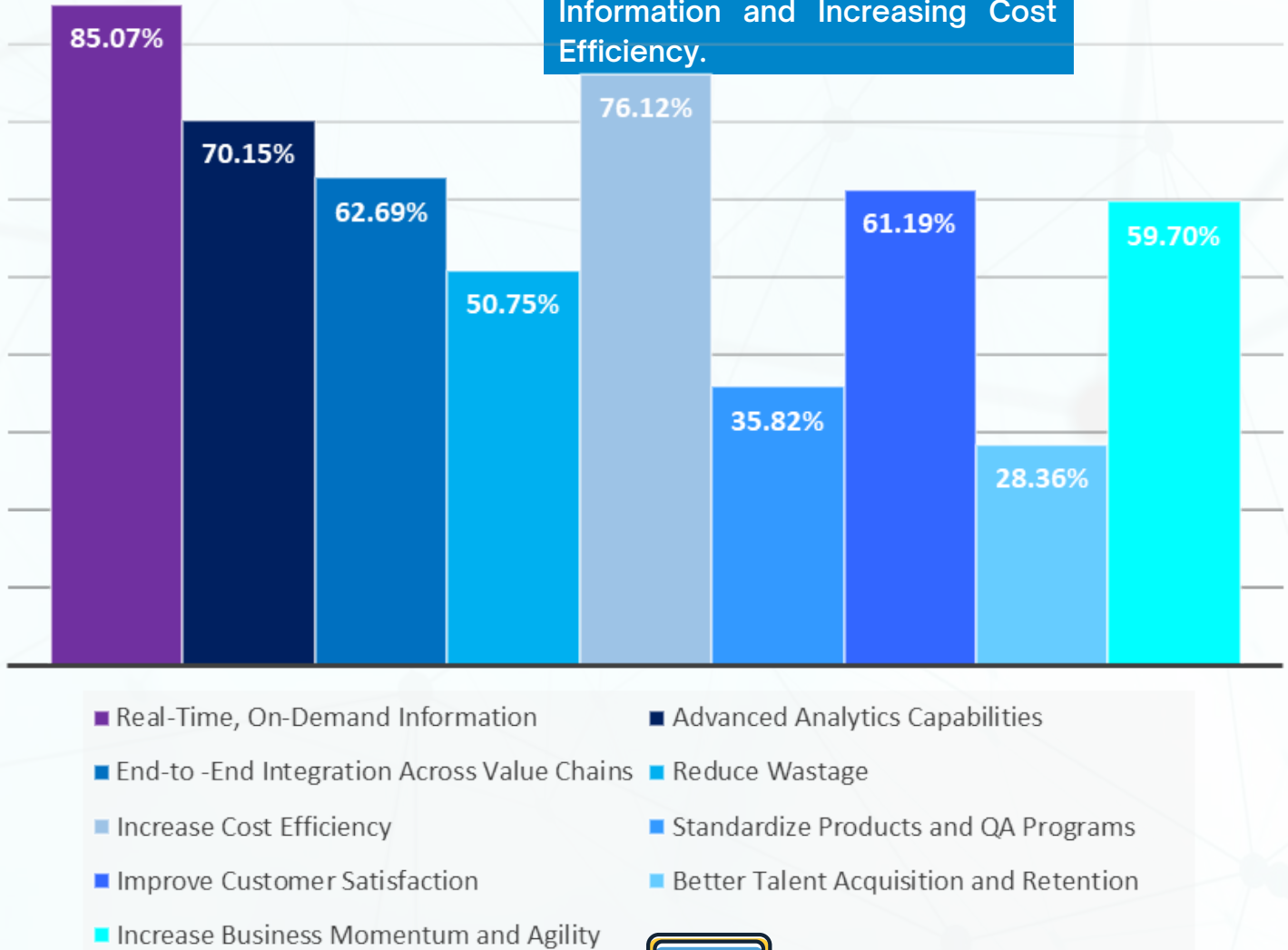
The idea of linked factories and digital technology can assist address some of the fundamental issues of operating traditional manufacturing. Reduced-than-potential output results in revenue losses, more significant capital and operational expenses, more immense inventory, worse workforce utilization, and lower yields and quality. Frequent equipment breakdowns, unrecorded minor/micro stoppages, decreased running speed owing to asset deterioration, forecasting inaccuracy, smaller batch sizes leading to repeated changeovers, and outdated procedures are the causes of these inefficiencies.

Gaps in current digital solution that Industries use or plan to use

Bar chart categories (left to right): Customized Solutions, Transparency, Security Concerns, Reliability, Scalability, User-friendly, Compatibility with Existing System, Others

60%

COMPATBILITY WITH THE EXISITING SYSTEMS

The industries need to ensure compatibility with the existing systems to achieve digital transformation. While technology is at the heart of Digital Manufacturing, it must be integrated with operations & current automation to achieve the necessary performance gains. The adoption of sophisticated manufacturing techniques will likely allow Indian enterprises to maintain cost competitiveness while also gaining a worldwide competitive advantage.

Deciding Factor of a Digital Solution

- ■ Customizability
- ■ User-friendly
- ■ Compatibility with existing system
- ■ Compliant to Global Standards
- ■ Past performance
- ■ Modularity
- ■ Scalability
- ■ Cost of Implementation
- ■ Security Protocols
- ■ Futuristic & Sustainable

According to **70.15%** of Industry leaders, user-friendliness and compatibility with existing system is the most important element while choosing a particular digital solution.

There are a variety of new and developing technologies that businesses are adopting in the digital age. Different parts of an organisation work to determine which technology or a mix of technologies is ideal for the necessary changes.
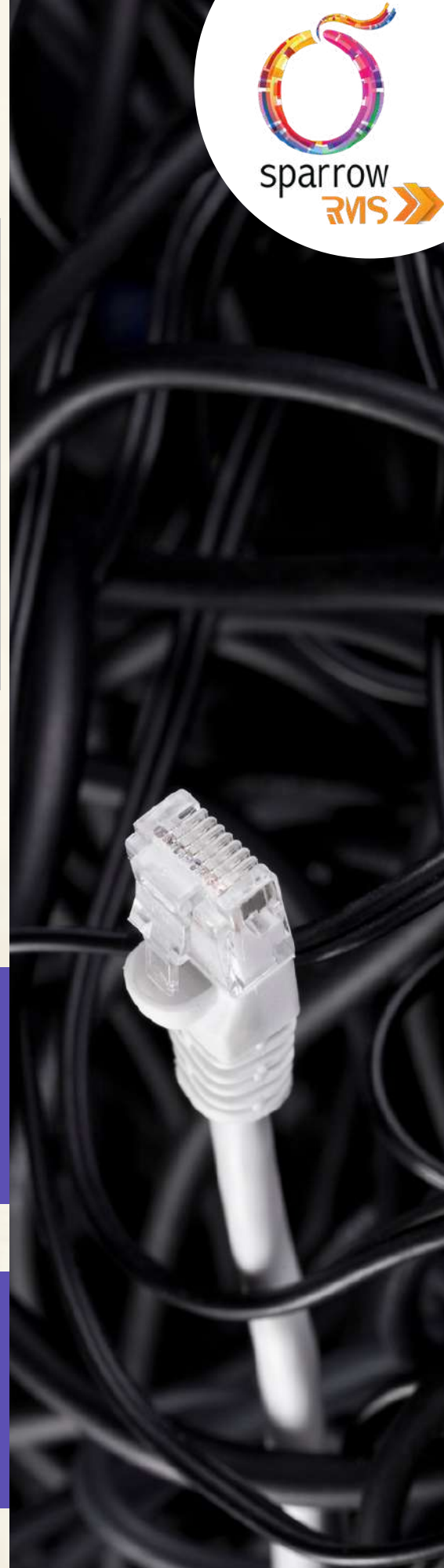
Vendor Evaluation - Criteria
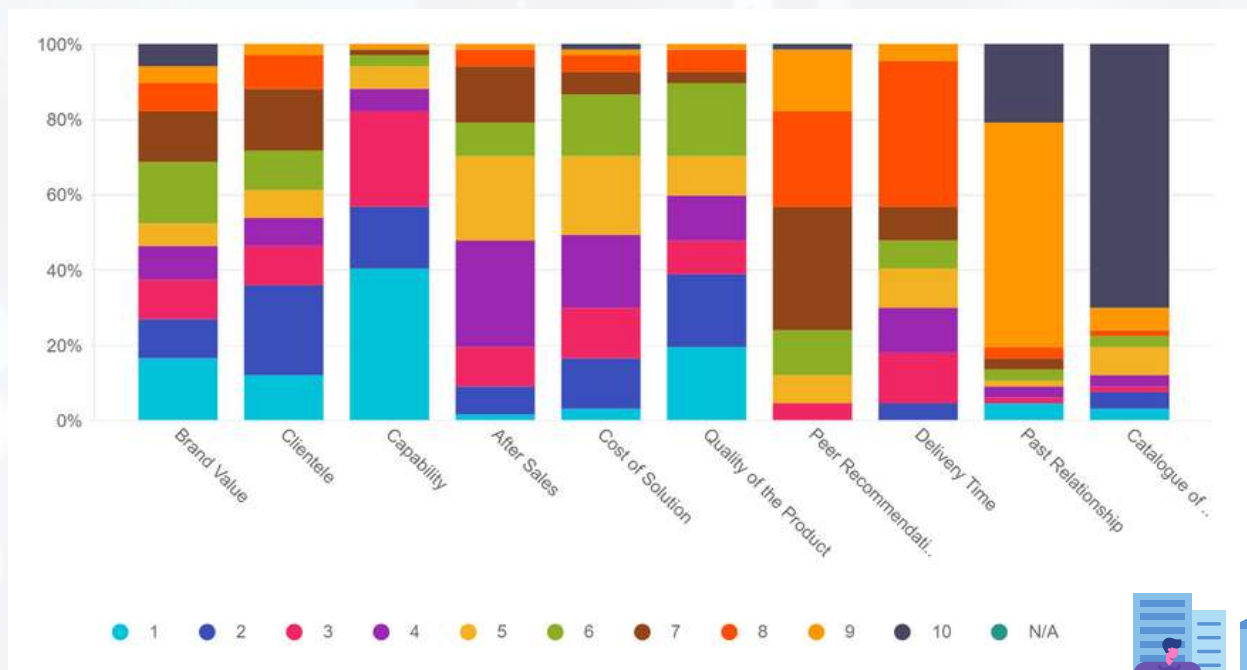
Choices	Rank
Capability	1
Quality of the Product	2
Clientele	3
Cost of Solution	4
After Sales	5
Brand Value	6
Delivery Time	7
Peer Recommendations	8
Past Relationship	9
Catalogue of Services	10

40.3% of leaders, ranked Capability as their number one priority while selecting a vendor for any digitalization solution, however capability remains subjective. Cost of solution is at 4th rank, which is bit surprising when compared to real market condition.
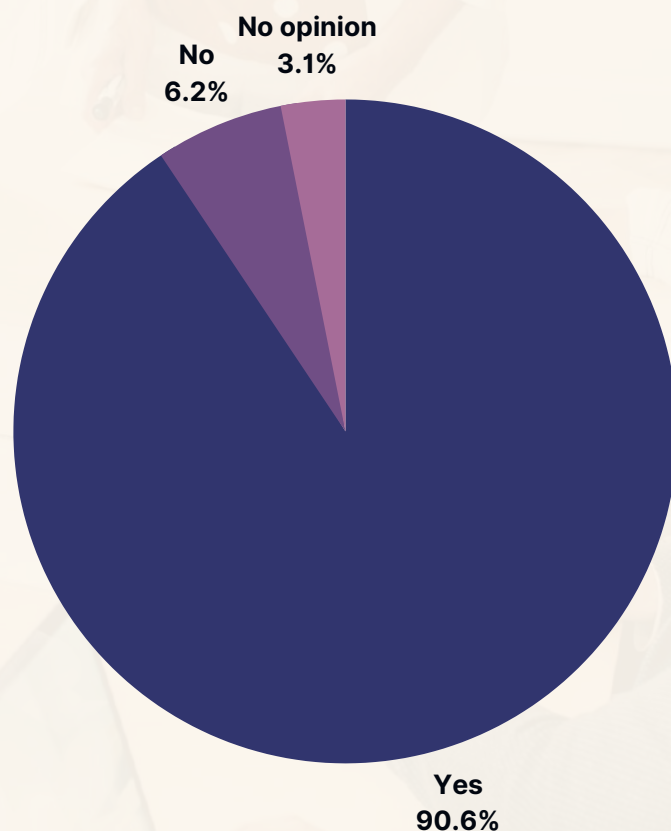
Role of Leadership

In this section, we analyse how leadership can help distinguish their companies in the industry

Do you think there needs to be a push for the top management to become more technologically aware in making well-informed decisions on an organisation's digital strategy?

The role of leadership is evolving in today's digital economy. Leaders must now be digitally aware in addition to being strategic and imaginative. And this entails being able to guide their companies through the digital transformation process. It involves more than simply digitizing existing corporate procedures and processes; it is an excellent place to start. Business leaders must rethink their primary functions and possibly their entire value proposition to succeed in the digital economy.

No opinion 3.1%
No 6.2%
Yes 90.6%

Does the presence of Tech Leaders help shape the companies' business strategy with digital solutions as a part of the same?

No
1.56%

No Effect
3.31%

Yes
95.31
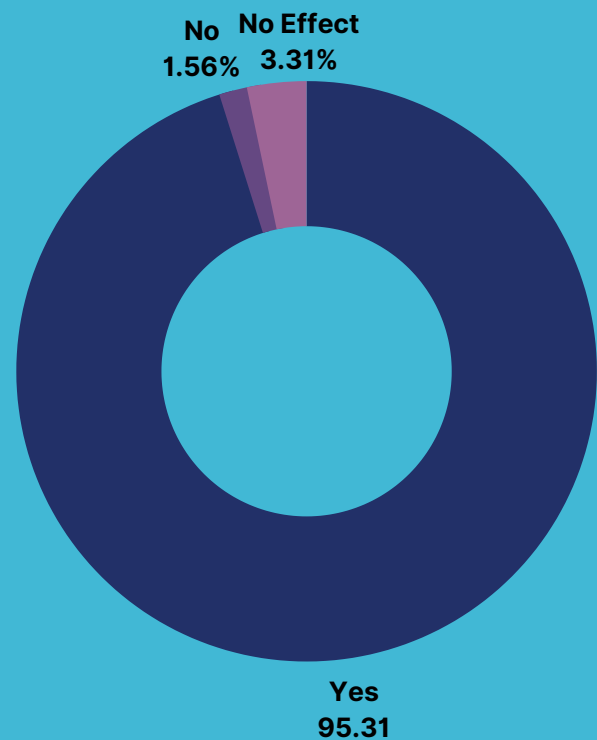
The importance of leadership in digital transformation cannot be overstated. Leaders must constantly innovate and create new solutions to address problems that did not exist previously if they want to stay ahead of the game. That requires thinking outside the box, taking risks, and learning from your errors. C-level executives who are constantly learning are frequently better positioned than their competitors to take advantage of cutting-edge technologies such as artificial intelligence (AI), automation, augmented reality (AR), virtual reality (VR), blockchain technology, cryptocurrency, and much more. The way businesses are run is altered as a result of digital transformation. It's not only about technology; it's also about leadership, management, and organisational culture shifts.

Level of Awareness

In this section, we gather insights about the tools and technologies the industry wishes to adopt and general awareness related to it.

Tools that are majorly used or implemented across organisations in some form of the other
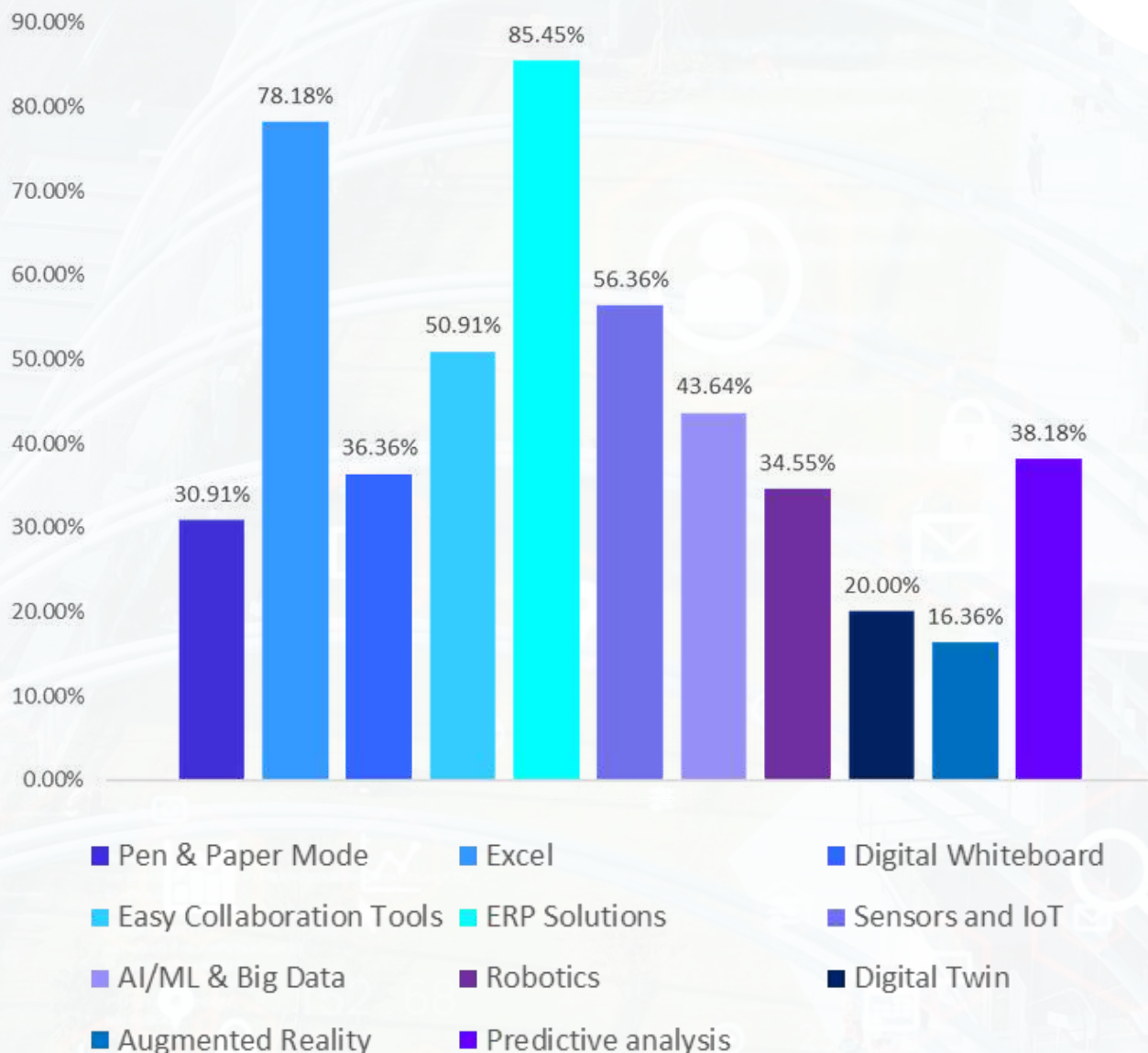
Excel **(78.18%)** and ERP Solutions **(85.45%)** are the two prevalent tools implemented across organisations heavily, while Augmented Reality **(16.36%) is** struggling to find some footing in the industry.

Which new technology in the digitalization space has the most exciting and feasible prospect for the organisations?
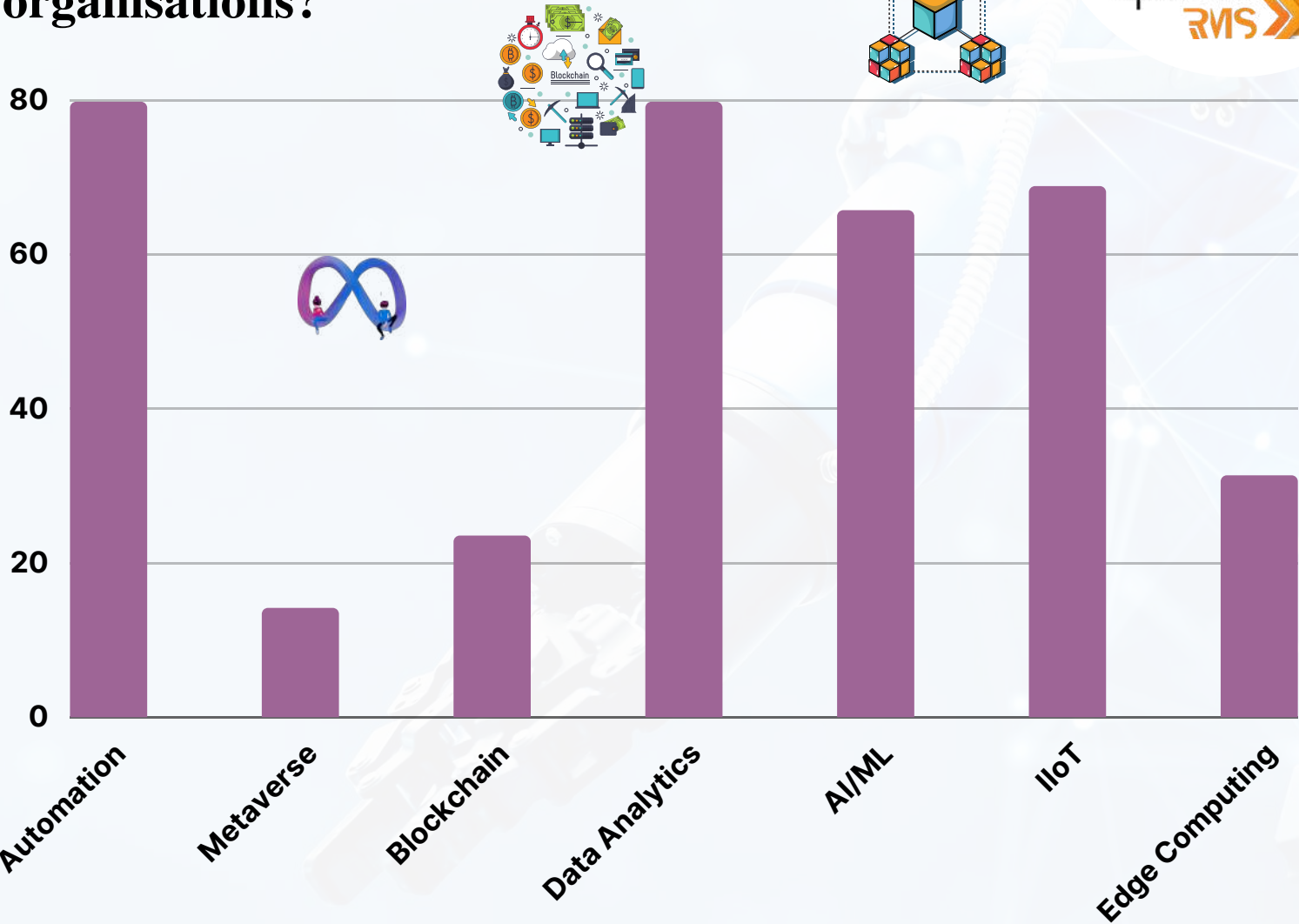
From big data analytics to advanced robotics to computer vision in warehouses, manufacturing technologies are bringing about unprecedented change. Around **79%** of the leaders believe that automation is the most exciting and feasible for organisations as they are more accessible, simple, and cost-effective. These technologies have also reduced and eliminated possible risks to human life, making the manufacturing process safer.

CONCLUSION

The report analyses India's digital manufacturing awareness, potential, readiness, and implementation status in-depth. Manufacturing executives are looking into implementing Digital Manufacturing in their businesses. Some even have a plan for Digital Manufacturing projects, including a strategy and detailed roadmap. However, certain clarity required on the ROI, data security to combine hardware, software, and technological infrastructure with digital systems and decision intelligence capabilities slow down these companies from moving forward with Digital Manufacturing adoption. The industry has used a variety of approaches to identify and eliminate these losses in recent years. However, we have reached a point where traditional methods are no longer effective, and emerging technologies are expected to enable businesses to achieve zero losses.

Industry leaders are implementing new technologies to improve process performance monitoring through KPI measurement and visualisation, performance tracking, throughput improvements, and quality improvement. However, there appears to be a wait-and-see mentality, with many executives waiting to see the results of existing proofs-of-concept before committing to large-scale adoption of emerging technologies like AI, 3D printing, Machine Vision, and Augmented Reality.

Manufacturing firms, we feel, are expected to be proactive, agile, flexible, and adaptive in a growing world of well-connected consumers, systems, and processes with tremendous ease of getting information.

Therefore. to remain competitive and achieve worldwide success, all businesses, whether small, medium, or large, must engage in implementing Smart Factory. Maintaining a competitive edge and achieving world-class status is also vital.

The time to act is now, and companies must find and onboard the right talent and engage with the right partners that can offer them a platform, hardware, sensors, and an application as a first step.

The necessity of the hour is for companies to immediately develop a Digital Manufacturing strategy that considers specific needs and makes data the core asset. While having the appropriate method is simply the beginning, firms would benefit from a clear roadmap specifying the functions and technologies used.

The losses on the work floor are considerable, and most performance gaps go unnoticed.

Ashish Pandey
CIO and CDTO
GlaxoSmithKline Pharmaceuticals Ltd

Manufacturing industry has started picking up a lot on overall digitalization.

Real value cases and brining them into life is something which industry has started looking into.

Leadership and its vision is going to create remarkable difference. Taking risks and looking at long term value realization at times have to be taken as bet when balancing COGS* is a definite imperative of overall organisations.

COVID has accelerated the journey and technology investments. Endorsement from board has become less challenging because overall value of tech is pretty much established.

Advent and usage of blockchain is going to play a significant role in SC and Manufacturing and industry should be ready to embarrass new ways of working in coming years.

COGS – Cost of Goods Sold

MR. Atanu Pramanic
CIO
Hindalco Industries Ltd.

For a successful Digital transformation, a leader acts as an "Enabler" who delivers end to end business requirement for a sole purpose of Customer Satisfaction and Business Growth. Taking a system perspective is critical for leaders, as DX is not limited to a single organisational function. For example, introducing a Coal Value Chain system may impact the whole life cycle of the Manufacturing Production Line and other key operational areas. It mandates a functional alignment of various organisational functions to avoid silos between new and legacy technology.

There's always new software, algorithms, computing languages, online standards, and protocols being developed.Hiring a skilled resource in DX area is always a challenge. Big %age of IT folks have very limited skills to no digital skills. It's not a stretch to assume that some potential employees are not digitally literate. Business should also find ways to reward and promote advancements in digital literacy within the organisation. This could be as simple as providing short courses. Ignoring technology can lead to falling behind and

irrelevance in a competitive business environment.

As per study done by a global consultancy firm, it was found that India is digitizing faster than any other country. Our country's Digital Adoption Index covers three elements: digital foundation (cost, speed, and reliability of internet service); digital reach (number of mobile devices, app downloads, and data consumption), and digital value, (how much consumers engage online by chatting, tweeting, shopping, or streaming). It has emerged as the second-fastest digital adopter among seventeen major digital economies. As digital capabilities improve and connectivity becomes omnipresent, technology is poised to quickly and radically change nearly every sector of India's economy (Agriculture, Healthcare, Retail, Logistic, Government, Business, Individual etc). That is likely to both create significant economic value and change the nature of work for tens of millions of Indians.

Digital transformation in manufacturing means enhancing traditional manufacturing

processes, products, and workforce with digital technologies, such as automation software, eCommerce, sensors, industrial robots, and more. Leading manufacturers are now realizing significant value from data and analytics, AI, and machine learning (ML). However, a large majority remain stuck in pilot purgatory, struggling to capture the full potential of their transformation efforts or deliver a satisfactory return on investment.

The Industry 4.0 is already influencing sectors like manufacturing, supply chain management, construction, shipping etc. and shall impact all the aspects of our day-to-day activities. The fourth industrial revolution, Industry 4.0 was triggered by the hi-tech innovations which brought the cyber physical systems together i.e. smart machines capable of exchanging real time information over the industrial internet of things (IIOT) for decision making process. Industry 4.0 is the ambit of various modern technologies like Cloud Computing, IoT, Artificial Intelligence, Big Data science, 3D printing, 5G, Drones, Communications etc., all leveraged for the ability to enhance the productivity in the manufacturing processes. But often, there is a genuine challenge for practitioners to define the problem statement. Many a time, manufacturers decide to deploy technologies without a concrete understanding of the problem they are trying to address. This causes them to be uncertain about the benefits it would drive and leads them to under-strategize the to-be-executed actions around the new technology deployments.

MR. Sharad Kumar Agarwal
CDIO
J.K Tyres and Industries Ltd.

It's been a roller coaster journey for everyone involved in Digital Transformation, especially during the difficult times dictated by the pandemic. It began with a conserving mode and gradually grew into a storm of new technology adoption enabling business. After the tremendous volatility of 2020, some dust has settled in the manufacturing sector, but that doesn't mean that things are back to how they were before the pandemic. With a desire to boost operational agility, the manufacturing industry looks for solutions to make itself disruption-proof.

Manufacturers can adapt to the pandemic's disruptions and establish resilience that will help them to prosper by continuing to engage in digital projects across their production process and supply network. Manufacturers must get closer to their customers and use tech-enabled distributed production solutions.

Smart autonomous systems capable of self-cognition, self-optimization, and self-customization are part of Industry 4.0, or the Fourth Industrial Revolution, pushing manufacturing automation to a new level. Automation and robotics are crucial components of Industry 4.0 – the arms and legs; cameras and other sensors are seen as senses; data and connection are seen as the nervous system; artificial intelligence (AI) is seen as the brain. It's ushering in a paradigm shift that will radically transform how we work, live, and interact.

Compared to developed countries, India's adoption of new-age technologies has been somewhat slow. Some of the biggest deterrents to Digital Transformation adoption include a lack of knowledge of the business impact, cost-effective solutions, and a lack of required capital/talent pool.

The customer experience is constantly evolving, and the rate of change has increased enormously because of the pandemic. One common theme emerging in this dynamic landscape is that customers today WANT & EXPECT a full-service experience.

Mr. Sudhakar Shivashankar
DIGITAL HEAD
Cavincare Pvt. Ltd.

Role of Leadership and Skill Level:

Digital businesses need to focus on building deeper relationships with customers to stay relevant in this competitive realm. As the stiffness to create a market dominance in the digital space grows with every passing day, only a higher customer retention rate can help companies thrive on profitability.

"The key is when a customer walks away, thinking, 'Wow, I love doing business with them, and I want to tell others about the experience.'" This quote from consumer experience expert Shep Hyken says a lot about building stronger relationships with customers and thinking of transactions later. Leaders need to re-strategize their execution models and put customers first to bring a massive change. That's what will drive profitability and growth that's sustainable.

Modern Technology is the most influential catalyst for individuals to amplify their leadership impact like a ripple effect. Through modern advancements, leaders can become multi-disciplinary by having firm control over processes to grow the business. Leveraging Technology helps leaders hone their teams' analytics and performance management and improvise strategic planning. The change in leadership roles is omnichannel through Technology, as it helps leaders make data-driven decisions. Technology is changing the roles of Leadership in multiple ways, such as:

- Leaders can forecast their organisation's growth orientation to get ahead of the competition
- It empowers leaders to make more audacious decisions to drive innovation
- Technology offers more opportunities and tenacity to lead multiple departments through automation

The most exciting technologies that can be adopted towards DX to revolutionize Indian Manufacturing:

When it comes to IoT and AI, most people think that growth is a one-day event. They see the potential for these technologies and assume that they will achieve the same

Continued....

results as early adopters. This can't be farther from the truth. The growth and implementation of IoT and AI is a gradual process that happens over time. It's important to be realistic about the expectations. These are evolving areas that will continue to change over time. Constant reiterations, evolution, and refinement will be required. And of course, scaling is also something that requires time.

Some enterprises may not be able to leverage these technologies if they haven't got the right team in place. While some might not yet have the right process alignment or governance framework. As the market matures and more businesses enter, expect things to get even more competitive in this space. If you aim for growth in the long run, apply, fail fast, and reapply. That is the only way to go. Growth is about incrementalism. Not overnight success stories!

As the world embraces technology more thoroughly, businesses are looking at the digital transformation to accelerate growth, achieve a competitive advantage, and transform the industry. This demands complex software systems, complex processes, and the right people to execute the plans efficiently.

Many large enterprises, who plan to drive digital transformation ensure they have a governance framework in place. Governance is about establishing the right technology strategy and aligning teams around the same vision. It is about defining milestones or KPIs for each project you undertake or implement at your organisation. Governance ensures that everyone involved in the project is on the same page with

technology updates and new releases. With so many moving parts to manage, governance becomes increasingly important if your organisation needs to get maximum value out of every penny they invest in digital transformation projects. According to Forbes, by having the right governance system in place can protect digital transformation processes, companies can:

- Reduce risks dramatically
- Build new visibility and insights across the organisation and into the future.
- Accelerate operations.
- Devote more time and energy to customers and growth opportunities rather than frustrating and low-value remediation projects
- Increase the chances that their digital transformations will drive superior business outcomes

Automation is a terrific tool. But automation and governance provide a fool-proof system for accelerated growth.

Other dimensions:
Inclusion, appreciation, and resourcefulness — these three are the core accelerators that offer impeccable growth to an organisation. An organisation's success is defined by how its team members feel when they step into the workplace. Do they feel stressed, anxious, or super-productive to tackle any business challenge coming their way?

The core of successful teamwork boils down to one thing — do your employees feel included when a crucial business discussion is going around? "If everyone is moving forward together, then success takes care of itself."

Mentors'
INSIGHTS ON DIGITAL TRANSFORMATION

Vishal Patil
GM – IT & Automation
Serum Institute of India Pvt. Ltd.

Role of Leadership:

Digital transformation requires that the people, processes and technology within an organisation align with the desired end goal in order to achieve the greatest success. Additionally, these areas need to be set up to continuously improve and adapt after achieving the initial goals of the transformation initiative.

If leadership is committed to leading company smoothly through its digital transformation and toward permanent adaptation then CxO should look at four essential tactics for greater success by implementing.

- Stay adaptable.
- Know your company inside and out.
- Take a holistic approach to digital transformation.
- Lead by example.

In the end, leading a successful digital transformation is more about taking the right actions than choosing the right technologies.

Skill Level:

Digital transformation is not limited to digitizing business processes and making additions to the technology portfolio; it calls for implementing new ways of learning and leading, fostering a culture shift, and aligning strategy, talent, and resources across the organization.
DX is a change process that demands a unique vision, perspective, and set of leadership skills to be successful.

Current digitalization Scenario of India:

At Present trend of digitalization India, 3 key area in view of Vision of Digital India.

1. **Digital Infrastructure as a Utility to Every Citizen 1**
- High speed internet as a core utility
- Cradle to grave digital identity -unique, lifelong, online, authenticable

Mobile phone & Bank account enabling participation in digital & financial space

2. Governance & Services On Demand
- Seamlessly integrated across departments or jurisdictions
- Services available in real time from online &mobile platform
- All citizen entitlements to be available on the cloud
- Services digitally transformed for improving Ease of Doing Business

3. Digital Empowerment of Citizens
- Universal Digital Literacy
- Universally accessible digital resources
- All documents/ certificates to be available on cloud
- Availability of digital resources / services in Indian languages

Expectations from DX in Manufacturing Industry:

My view on Digital transformation in manufacturing are involves integrating digital technologies into processes and products to increase manufacturing efficiency and quality. Expectations are mentioned as pointers:

- Data Visualization and Performance Tracking : e.g. Digital dashboard (Smart Manufacturing)
- Digital and mobile platform for frontline: e.g. paperless process eDMS, eQMS etc.
- Advance Planning : Dynamic scheduling
- Parameter optimisation: Advance analytics for yield and throughput optimisation.
- Automation, Digital Maintenance.: Digitizes work order.
- Digital Laboratory : In Process testing, LIMS

Development post COVID-19:

During pandemic, consumers have moved dramatically toward online channels, and companies and industries have responded in turn. The rapid shift toward interacting with customers through digital channels.

Post COVID-19, Businesses are looking at technology as a helpful means of engaging with customers, allowing some workplace flexibility, and for a way to introduce automation and faster processes.

The most exciting technology that can be adopted towards DX to revolutionize Indian Manufacturing:

- Big data analytics can offer several ways for improving asset performance, streamlining manufacturing processes and facilitating product customization.
- Internet of things (IoT): The capabilities of the IoT are rapidly being implemented in industrial and manufacturing domain, providing plant owners with a way to increase productivity and decrease the complexities of processes.
- Virtual reality (VR) is simplifying the product design process by eliminating the need to build complex prototypes.
- AI and ML seem to be the next wave in manufacturing. AI is helping production teams analyze data and use the insights to replace inventory.
- Reduce operational costs and offer seamless quality control over the entire manufacturing process.

Other Dimension:

Empowering employees, Engaging customers, Optimize operations, Services and products.

Sparrow **Dedicates** this year Research Insight to the Innovator who Changed the Digital World Forever.

Steve Jobs (1975-2011)
Founder Apple, Pixar & NeXT

Here's to the **crazy** ones, **misfits.** the **rebels,** the **troublemakers,** the round pegs in the square holes, the ones who **see things differently.**

They're **not fond of rules** and they have **no respect for the status quo.** You can quote them, disagree with them, glorify or vilify them but the only thing **you can't do is ignore them**- because they change things, **they push the human race forward.**

Well, some may see them as the crazy ones, **we see genius** because the **people who are crazy enough to think they can change the world are the ones who do!**

-Steve Jobs

sparrow RMS

Digital Twin | Data Lake | **Workflow** | Process | **OEE** | Advanced Analytics | **IOT**

We are Digitalization Enablers !

We are here to revolutionise the Manufacturing Sector through Services & Technology.

Process | EHS |Operations| Maintenance| Foundational Intelligence

We are Sparrow !