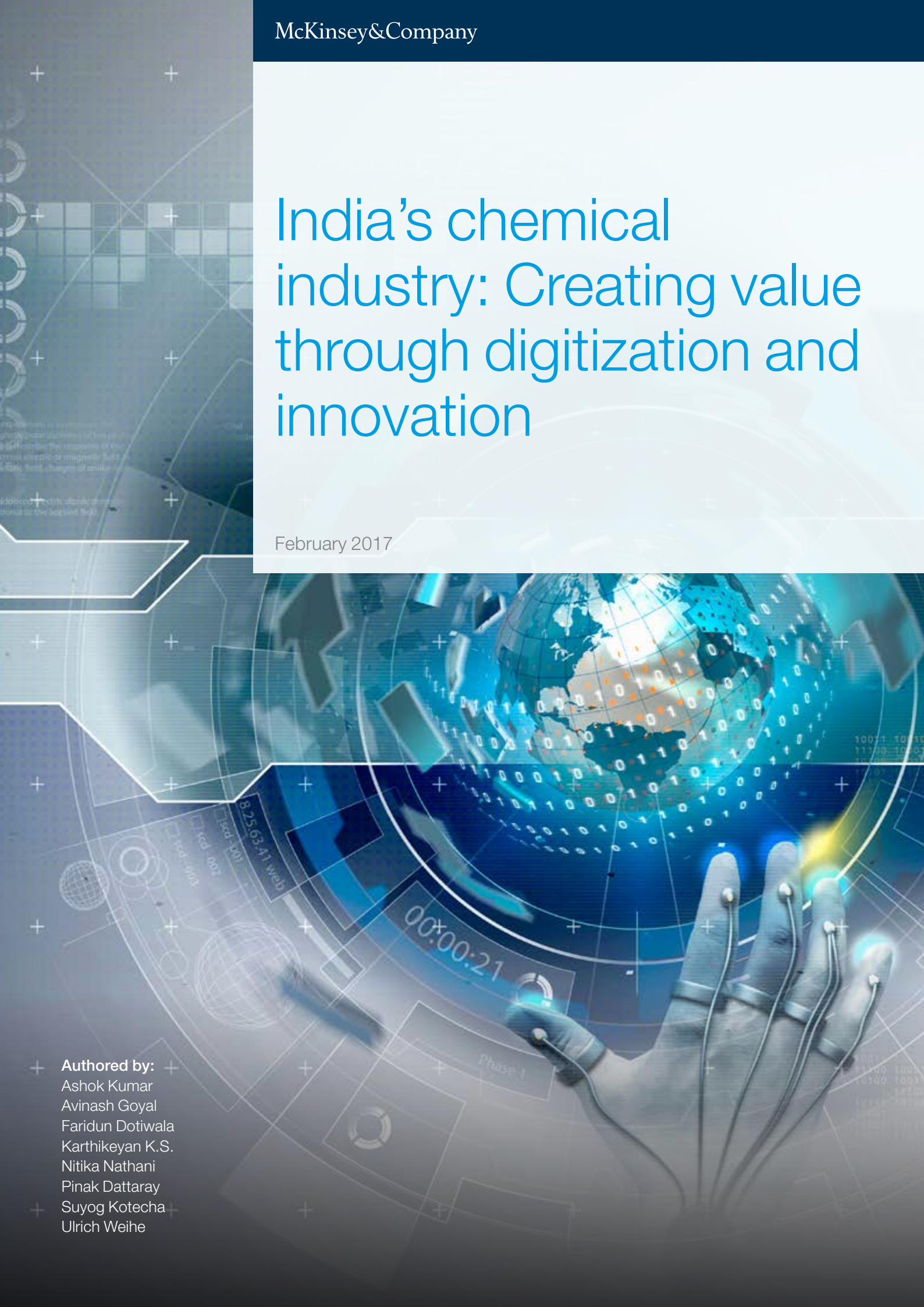


# India's chemical industry: Creating value through digitization and innovation

February 2017

**Authored by:**

Ashok Kumar  
Avinash Goyal  
Faridun Dotiwala  
Karthikeyan K.S.  
Nitika Nathani  
Pinak Dattaray  
Suyog Kotecha  
Ulrich Weihe





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291873  
are Center

# HISTORY<sup>2</sup> RECORDS EXAMS DIAGNOSIS<sup>1</sup> RESULTS PRE

32-54/B



NEW DATA AVAILABLE

**BLOOD RESULTS**

INVESTIGATION	RESULTS	NORMAL VALUE
Haemoglobin	11.5 g/dL	12-16 g/dL
Haematocrit	35%	37-47%
MCV	104 fL	84-101 fL
MCH	29.5 pg	27-34 pg
MCHC	28.3 g/dL	32-36 g/dL
RDW	14.5%	11.5-14.5%
Platelets	150,000	150,000-400,000
WBC	10,000	4,000-11,000
Neutrophils	65%	50-70%
Lymphocytes	25%	20-40%
Monocytes	10%	2-10%
Eosinophils	0%	1-5%
Basophils	0%	0-1%

**PRESCRIPTION**

Patient ID 132-34/B  
DOB 9/2/54

HC 291873  
Doctor ID 254PB  
Date 12-08

Rx

112-87 500mg Tablet Sustained Release 2008

Qty: 1  
Strength: 500mg  
Frequency: 1x daily  
Route: Oral

Healthcare Center

Signed by 132-34/B

CALCULATING



CONNECTION STATUS	stable
COMMUNICATOR	open
INTERNET	high speed
BATTERY	97%
TIME	14:45
TIME CONNECTED	0:25
LANGUAGE	English
LOG OUT	...
ITEMS BROWSED	12
MODEL	25/78-946
PATIENT ID	132-34/B
HC 291873	active
DOCTOR ID	254PB

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# Introduction

The chemical industry in India as well as globally has outperformed the market in recent years. Yet, a state of flux remains, with new entrants in emerging markets dismantling existing oligopolies, and a slowdown of GDP growth in many key markets including China<sup>1</sup>.

Chemical companies have before them a world of possibilities inherent in the disruptive trends of digitization and innovation. Simultaneously, concerns about adapting to change, managing and boosting productivity and implementing effective transformations cloud the brows of industry players.

The report published for the Indian Chemical Council Conference of 2016 talked about “Living in a volatile world—Challenges and opportunities for the chemical industry”. This year, the conference discusses the disruption and innovation which could shape the future of the chemical industry.

Published on the occasion of the 10th Annual India Chemical Industry Outlook Conference 2017, this report captures the essence of four presentations being made at the conference. Its content shines a spotlight on some of the main concerns confronting the industry. It looks at various ways to embrace and tap into the potential of digital and innovation as companies adapt to a fast-changing environment.

The first article, **“India’s chemical industry: Creating and sustaining value”** presents the capital market perspective on the chemical industry, which has been outperforming domestic and global markets. While multiple drivers create value for chemical companies, various surveys indisputably point to the importance of innovation as one such crucial value driver for the future. Organizations could strategically think about innovating in products, processes or business models, or a mix of these, to be at the forefront of innovation-led growth.

Digitization has changed the structure and behaviour of many industries over the last 20 years in myriad ways, often bringing competition to formerly protected markets, disrupting incumbents and creating new prevalent players in rather “traditional” industries. The chemical industry is at the beginning of the digital journey, gradually moving into a shaping phase. **“One or zero? Where is digitization taking the chemical industry?”** presents ways to systematically view digital opportunities in the chemicals space. To identify opportunities in the digital sphere, companies may need to depart from the usual approach and think “business backward”.

Focusing on digital advances in manufacturing, the next article, **“Digital in manufacturing: Hype or hope?”** looks at digital levers as enablers to create Industry 4.0. It anticipates a paradigm shift from viewing digitization primarily as a cost and execution vehicle towards seeing it as an engine for innovation, growth and revenue. The article puts forth relevant use cases where adopting digital technologies has created value, and presents five approaches that have helped manufacturers successfully tap the power of digital.

Keeping pace with a fast-changing environment demands agility within the organization, its culture and processes. **“HR: The HeRo of the future organization”** positions the human resource (HR) function as a vital enabler, the hero who could facilitate a transformation to help companies cope with this era of volatility.

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In these times of change, the chemical industry is at a turning point. Choosing to move with the times, adapting to new trends and proactively transforming organizational mindsets and processes could ease the transition and create a winning combination.

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<sup>1</sup> World Bank GDP data

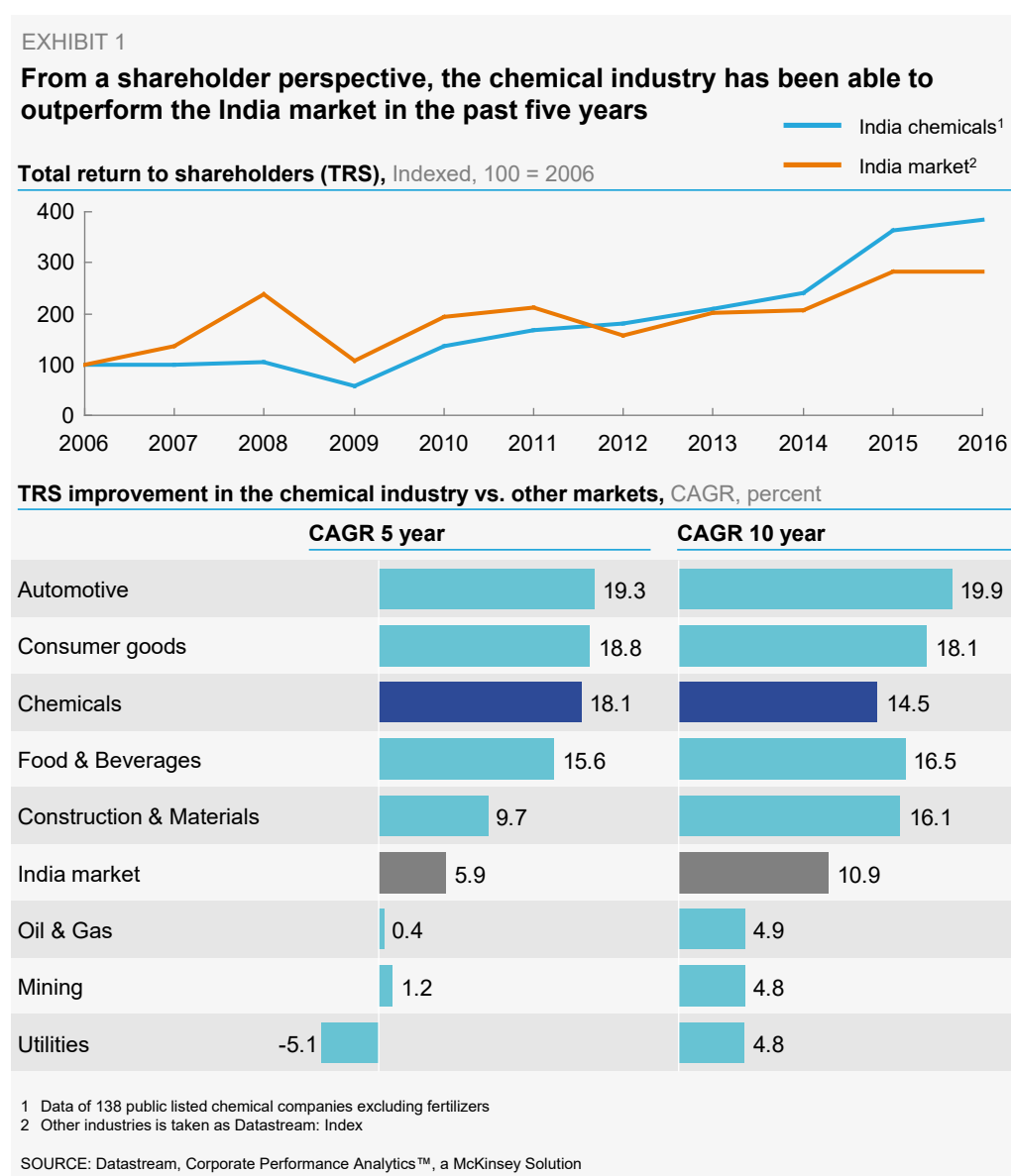


# India's chemical industry: Creating and sustaining value

The Indian chemical industry has surpassed the performance of local markets and its global peers in recent years, primarily through return on invested capital (ROIC) and growth. While companies have historically been performance oriented, innovation will play a key role in the future to sustain growth and profitability. Rich data from the capital markets supports this perspective, as do the opinions of Indian leaders, voiced through a survey<sup>2</sup>.

## The capital market perspective on the Indian chemical industry

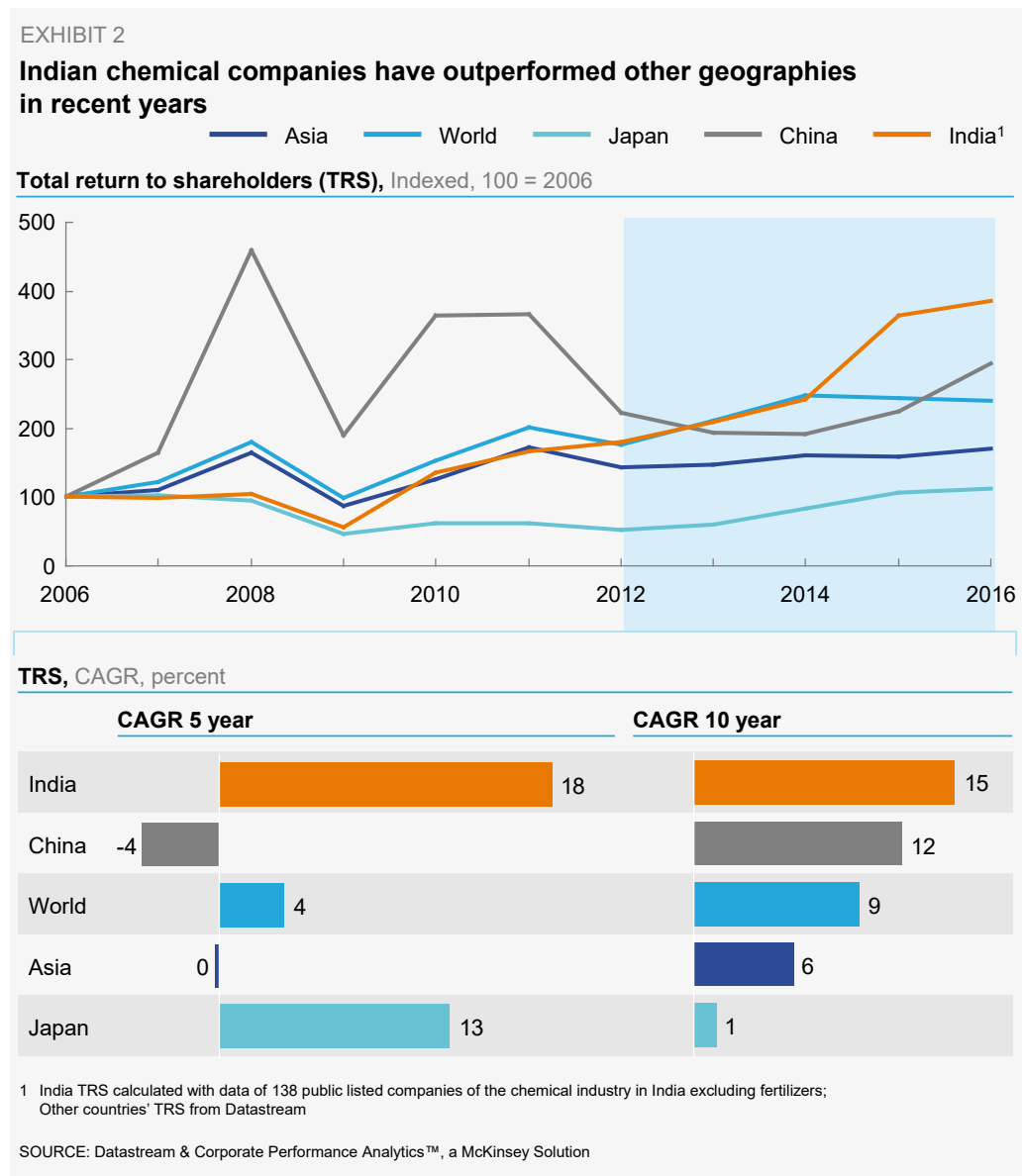
The Indian chemical industry has been outperforming the market in the last five years (Exhibit 1)—it delivered 18.1 percent total return to shareholders (TRS)—an impressive 12.2 percent more than that earned by Indian markets. Further, the industry outdid some upstream sectors such as oil and gas, mining and utilities, and also some of the downstream sectors such as construction, and food and beverages.



<sup>2</sup> Innovation Survey 2017, a survey of the top management of Indian chemical companies in January 2017

This is not restricted to India. Over the last three years, the Indian chemical industry surpassed the performance of its global peers (Exhibit 2). A strong development in earnings facilitated this growth<sup>3</sup>.

There is also an interesting trend at play among the different types of companies in the chemical industry—specialties and commodities. Over the last decade, specialty companies showed improved ROIC, driving valuations by their current profitability, i.e., operating profit generated per unit of capital. On the other hand, commodities companies were valued based on their expected top-line growth and profitability<sup>4</sup>.



<sup>3</sup> Datastream & Corporate Performance Analytics™, a McKinsey Solution

<sup>4</sup> McKinsey's proprietary Corporate Performance Analytical tool

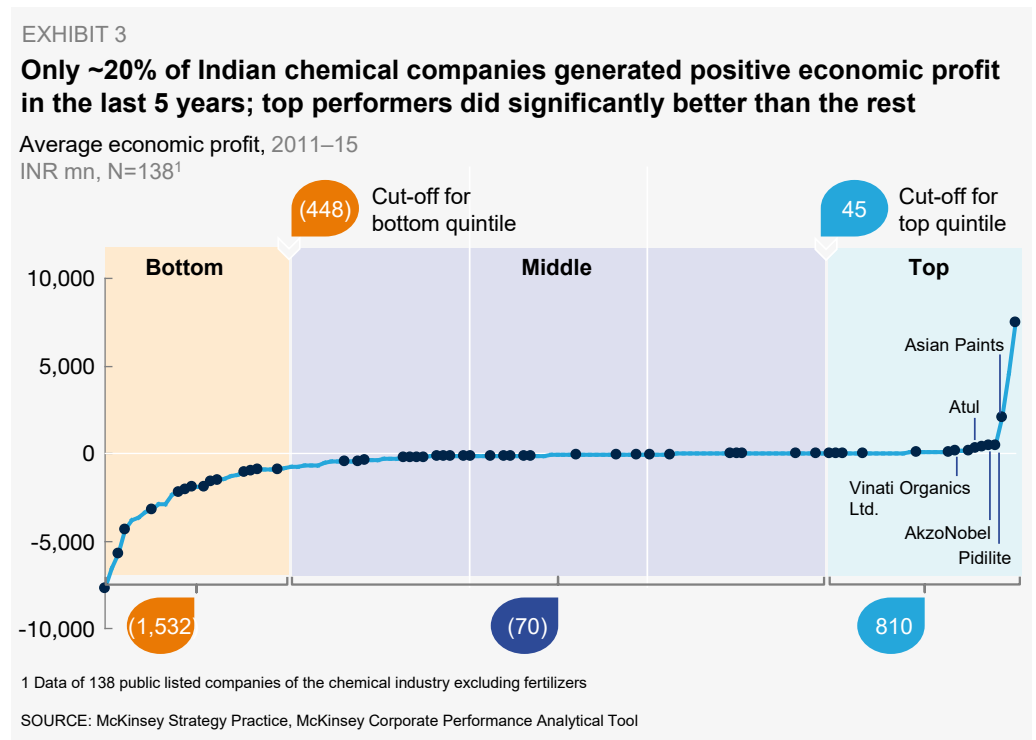
## Drivers of value creation

Research conducted across approximately 2,400 companies globally to understand the drivers of value creation showed that economic profit<sup>5</sup> is one of the best metrics for long-term value creation and is also seen as strongly correlated to TRS. Plotting the 2,400 companies in order of their annual economic profit reveals a power curve in which companies in the top, middle three and bottom quintiles inhabit very different worlds, with returns heavily skewed to the top quintile. In the middle three quintiles, most of the companies barely cover their cost of capital and the average economic profit generated is close to zero.

Companies that generated significant economic profit benefitted from three things:

- **Endowment:** This refers to the starting point of a company, or “**who they are**”. It includes size, leadership, commercial capabilities, capital structure, R&D investments and geographical diversification
- **Industry trends:** These tell organizations “**where they are**”. A company creates value when its overall performance is significantly driven by the portfolio of industries it represents
- **Big moves:** These focus on “**what organizations do**” or, the strategic choices a company makes, such as resource allocation, M&A, divestments, capital investments, innovation, operational and commercial excellence. These choices can make a fundamental difference to the company, and innovation excellence is one of the big moves.

Similar trends emerge if we plot the companies in the Indian chemical industry in the order of their annual economic profit generated—only around 20 percent of companies in the Indian chemical industry generated positive economic profit in the last five years (Exhibit 3).



5 Invested capital multiplied by the difference between ROIC and weighted average cost of capital (WACC)

On average, an Indian chemical company earned approximately 10 percent ROIC, which implies negative economic profit considering the WACC in the chemical industry in India is approximately 11 percent<sup>6</sup>. In addition, there is a challenge in performance sustainability across cycles—only half of the companies from the top quintile five years ago remained there in 2015. And 11 percent of companies in the top quintile in 2015 had been in the bottom quintile in 2006<sup>7</sup>. One of our observations is that innovation has played an important role for many of those companies that have generated economic profit in India.

### The industry speaks: Innovation as a key driver of growth

Innovation is seen as one of the biggest drivers of growth and value creation. In January 2017, the top management of Indian chemical companies were surveyed on the topic of innovation. Leaders spoke seriously about the importance of innovation given the megatrends shaping the industry. However, the level of preparedness and the willingness and ability to invest varied across companies. The survey yielded three key insights:

- **Innovation could help ride megatrends:** Over half (51 percent) of all respondents recognize that several megatrends could significantly impact the chemical industry but only 35 percent believe that they are well prepared for it. The gap between perceived impact and preparation levels was particularly high for three major trends—new materials and manufacturing technologies that could redefine product development, the increasingly demanding consumer and regulatory requirements, and globalizing R&D footprints. Other trends identified as relevant included big data and advanced analytics and digitization of a product’s lifecycle.
- **Innovation is important but many companies are not “ready”:** Around 67 percent of companies felt that innovation-led growth was critical to success, but 53 percent felt that they did not invest sufficiently in innovating across their products and processes. At the same time, while 60 percent of companies shared that they did have differentiated customer-backed insights to develop into winning value propositions, a near-equal 61 percent said that they lacked the processes and capabilities to actually develop those into quick innovations that beat competition.
- **Lack of investment for the future:** While innovation-led growth could drive future revenues of the chemical industry, companies may not be investing enough resources in it. At least 20 percent of respondents felt that innovative products could contribute to over 20 percent of their revenue in the future. However, at present, 47 percent of firms spend *less than 1 percent* on innovation.

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6 McKinsey Strategy Practice (Beating the Odds model) and Corporate Performance Analytics™

7 McKinsey’s proprietary Corporate Performance Analytical Tool

## The road ahead

Innovation is a big idea that offers immense potential for companies. To strengthen their growth momentum, companies could innovate across their products, processes and business models, and actively incorporate the ingredients for success into the way they function. Learning from the leading practices of high-performing innovators could help to form an essential operating system for innovation within a company's organizational structure and culture<sup>8</sup>.

Companies could find opportunities to innovate in three areas:

- 1. Product:** Product innovation means different things to different people. Some think of it in terms of creating a product that is the “first of its kind” in the market. Such radical innovations are not always as important. Steady, incremental improvements to existing ranges of products produce equally good results for far more companies over the years
- 2. Process:** Investing in new processes could help firms improve productivity, material utilization, quality or reliability. They might even gain the capacity to manufacture new products otherwise beyond their reach. Many organizations have started investing in process innovation and leveraging analytics for that. In our experience, Indian firms are much better on process innovations, for example, re-engineering existing manufacturing processes, working with industry experts to improve yields and reduce material consumption, etc.
- 3. Business model:** In a disruptive age, existing business models are under attack. Also, business-model innovations lead to far greater value creation compared to introducing just new products and processes. For e.g., companies have started employing combinations of services with products as a business model innovation. For incumbents, however, such innovation is notoriously hard. Some struggle to merely recognize the possibilities, while others shy away from cannibalizing profit streams.

## Striving for innovation

Focusing on seven critical elements that support holistic growth could enable successful innovation:

1. Balance project portfolios through timelines and risk profiles and always ensure that a project has “startup ability”
2. Drive R&D by longer-term market needs using big data, lean production, etc. (insights driven) rather than only short-term customer needs (reactive)
3. Work closely with regulators and be their thought partners
4. Holistically address productivity potential in R&D

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8 *The eight essentials of innovation*, Marc de Jong, Nathan Marston and Erik Roth, April 2015, McKinsey Quarterly, <http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-eight-essentials-of-innovation>

5. Do not underestimate the complexity of commercialization/launch
6. Build organization capabilities around new technologies (big data, machine learning, etc.)
7. Partner up, because the complexity of finding solutions to some of today's chemicals challenges is too large for a single company to solve.

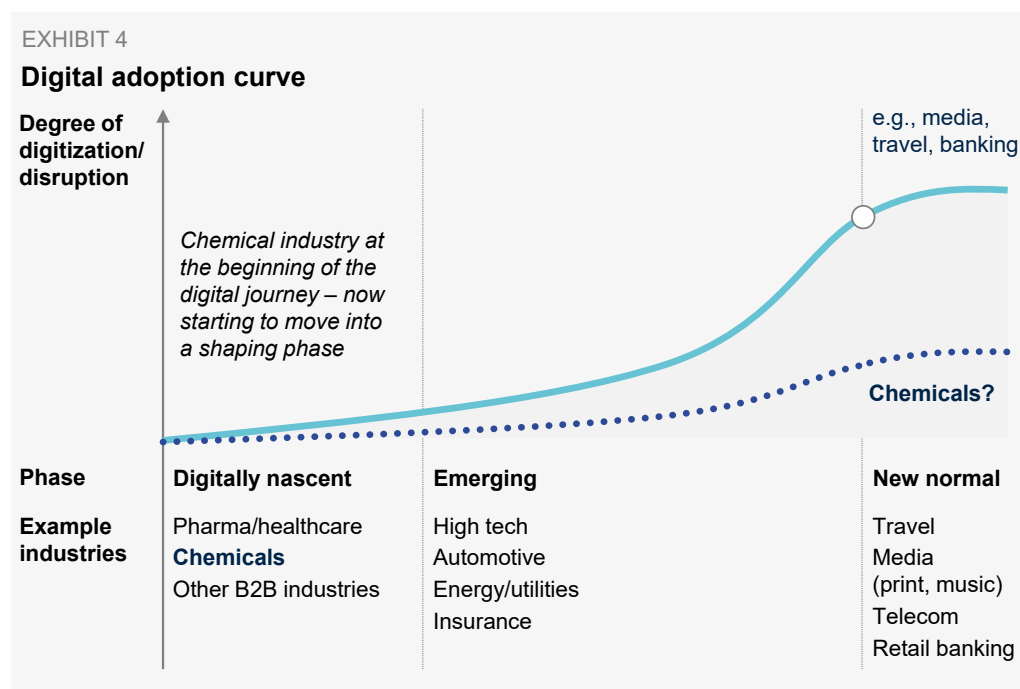
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Cultural factors and fixed routines could impede the journey to innovation. Companies that do achieve innovation excellence often build it through a multiyear transformation that touches most, if not all, parts of the organization. This could shift innovation from a seasonal exercise to a way of life for organizations that strive to be frontrunners in their industry.

# One or zero? Where is digitization taking the chemical industry?

Digitization has in the last two decades changed the structure and behaviour of many industries in myriad ways. It has brought competition to formerly protected markets, frequently disrupting incumbents, while creating new players in otherwise “traditional” industries. While digitization in the chemical industry is low at present, it is likely to take off in the next decade. Its influence on current business models in the chemical industry could push current companies to reinvent themselves and adjust to new digital realities.

While many business-to-consumer (B2C) industries have successfully transformed to varying degrees due to digitization, business-to-business (B2B) industries—and the chemical industry in particular—are yet to join the bandwagon (Exhibit 4). The global chemical industry reports the second lowest level of digitization. This could partly be because fundamentally different “digital attackers” who often push incumbents to digitize themselves have not yet entered the chemical industry. In essence, digital is emerging in chemicals but will it be as disruptive as in some B2C industries?



## Drivers of digitization in the chemical industry

Although many chemical industry players have launched efforts to digitize, no clear “digital leader” has emerged. Technological advances have contributed to four fundamental drivers that could shape the digitization phenomenon and create a need for change within the industry:

- **Advanced analytics**, which is the use of sophisticated analytical methodologies to extract value out of large, complex and unstructured data sets (from regression, neural networks, deep learning and machine learning)
- **Automation**, which refers to using devices (e.g., robots) to increase speed, precision and safety, and to cut costs by reducing human interventions (e.g., in the operations environment and G&A functions)

- **End-to-end process optimization**, which essentially debottlenecks information flows through digital means, e.g., by removing man–machine interfaces both in communication with the outside (e.g., “no-touch order”, “online customer journeys”) and the inside (e.g., S&OP processes, demand forecasts)
- **Connectivity and sensing**, which is the interconnection of objects and personnel sensors, small-scale hardware, etc.) to enable new channels, advanced analytics, automation, and end-to-end (by creation of data pools, interfaces, etc.)

These drivers could certainly affect individual business and support functions (e.g., M&S, operations, supply chain management, R&D), thereby enabling a new horizon of functional optimization. They could also substantially change existing business models, generate opportunities for completely new businesses and potentially disrupt entire business systems. It is thus imperative to diligently map the opportunities and risks for each business and to derive an approach for tailoring the answer. In the end, the question is all about how to deal with these changes from whichever end you are facing them—will you be the disruptor or the disrupted?

### Emergence of new, digitally-enabled business models

The influence of digitization on business models could lead to the emergence of new value pools or the disappearance of today’s value pools, causing business models to evolve in two ways.

#### **Disintermediation of the value chain–customer interface (establishment of an “Amazon+” model for chemicals)**

Currently, the chemical industry is struggling with managing the complexities of the marketing and sales front-end, including its technical service requirements (thousands of customers, hundreds of products for hundreds of applications). In particular, the specialty chemical industry requires a holistic “commercial engine”—a feature that only a few players have truly optimized.

Digitization could allow for better forecasting of demand and innovation, increased customer reach, dynamic price setting, algorithm-based technical problem solving and efficient end-to-end transaction execution. Current chemical distributors could have the best chance to tap into this value pool, provided they establish sufficient technical capabilities (e.g., technical service, application development, etc.). In the first stages, some companies (e.g., BASF through Alibaba) are testing to disintermediate the chemical distribution system by building their own customer engagement platform to serve their long tail of C customers (but also to offer additional services to their A and B customers)<sup>9</sup>. The full, end-to-end go-to-market approach could be automated here in the future, including no-touch-order processing, automated demand forecasting and online up-/cross-selling enabled by advanced analytics.

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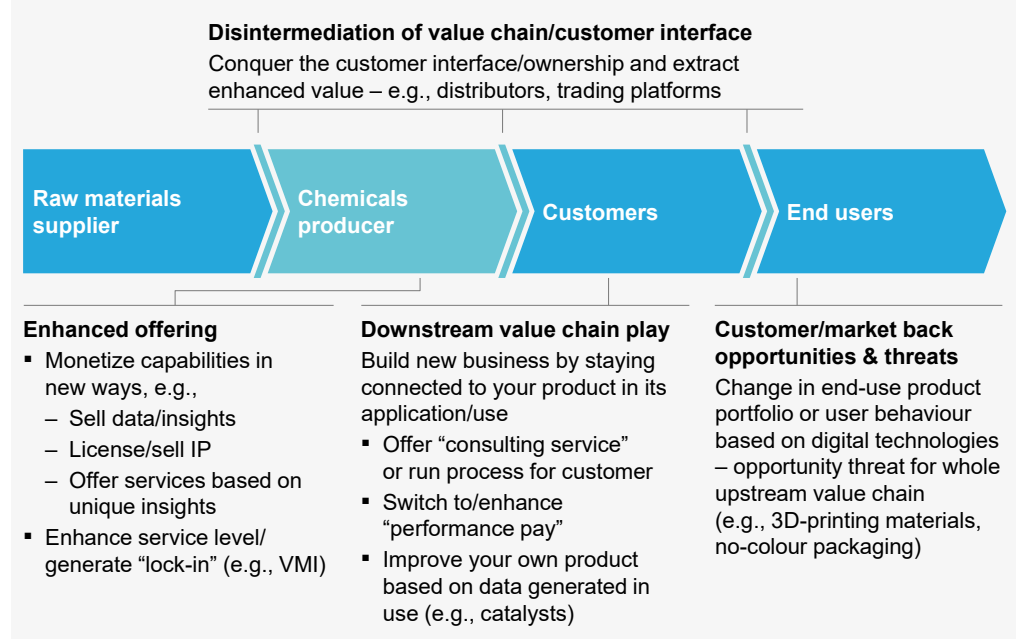
9 Press search

## Changes in business models based on linking data with the sale of chemicals

This represents movement along the value chain and enables a different way of monetizing proprietary knowledge (Exhibit 5). This could be done through

- **Enhanced offerings**, such as the monetization of IP generated by implementing novel, digitally-enabled technologies or processes by capturing licensing fees
- **Downstream value-chain plays**, such as linking the performance of the process into which the chemical is incorporated to remuneration. While this is already feasible in a classical setting, digitization (sensor technology in particular) could enable much more effective steering (and optimization) of downstream processes at the customer's end ("always-on", e.g., Paintshop). These are essentially "pay-as-a-service" models
- **Customer-/market-backed opportunities** and threats, such as demand for new materials in the chemical industry, e.g., 3D-printing material could substantially alter the future demand structure for chemicals

EXHIBIT 5



## The next horizon of digitally-enabled functional excellence

We see that digitization provides new tools for established functional excellence approaches that could help to substantially improve performance across all different functions in the chemical industry. Overall, an estimated improvement potential of 8 to 13 percentage points in EBIT for chemical companies may be achievable over 10 to 15 years (Exhibit 6):

- It has long been known that the next wave of digitally-enabled lean-in **operations and SCM** like predictive maintenance may come from yield and energy optimization, robotics, and automated S&OP planning processes. Automation of **R&D** work such as experimentation, electronic management of knowledge systems, AA-enabled simulation/modelling of formulations. However, these processes are really starting to be implemented

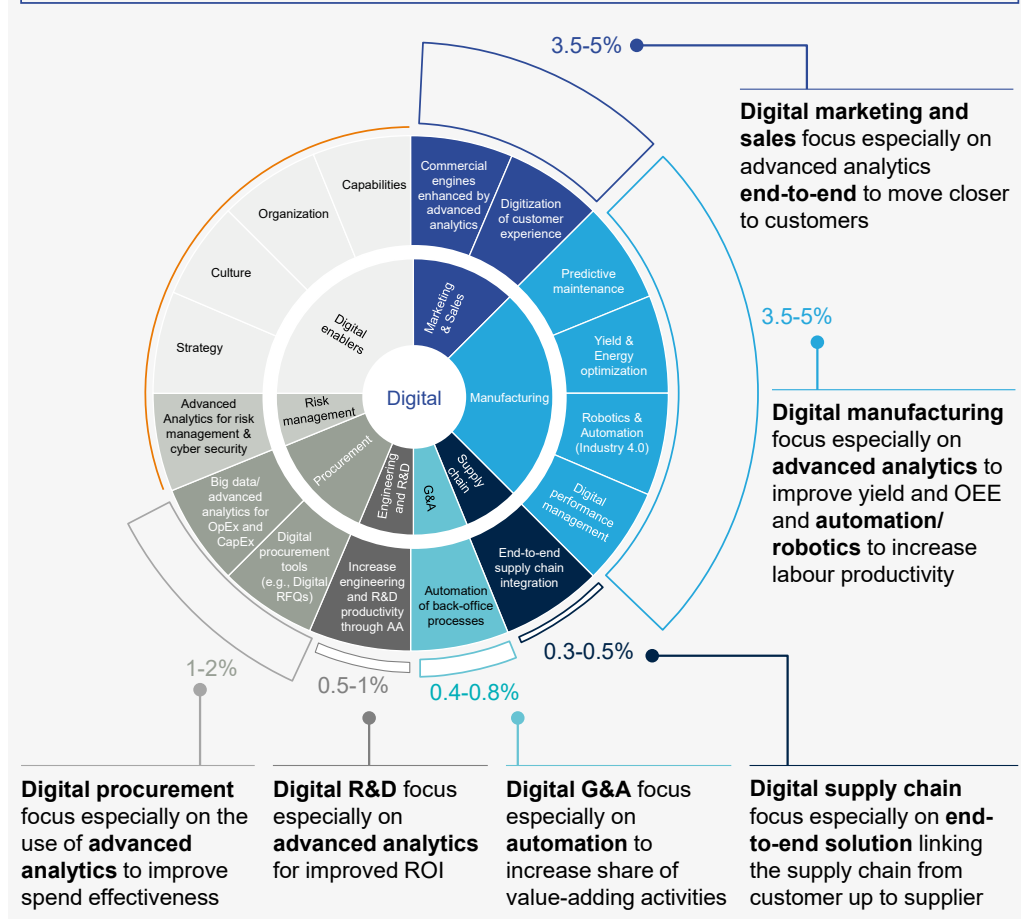
only now due to the availability of inexpensive sensor data in production, computing power and the availability of required applications to work on the necessary data

- Buildup of digital go-to-market models in **sales** that mainly focus on end-to-end customer engagement platforms and are supported by advanced analytics, i.e., next product to buy (up-/cross-selling), churn prediction, transactional and value pricing algorithms, customer segmentation algorithms, and growth finders
- Automated spend visibility and price comparison analytics in **procurement** that is supported by end-to-end category strategy workflow portals, with strong use of e-sourcing solutions; 100 percent automation of procure-to-pay process
- Automation of **R&D** work such as experimentation, electronic management of knowledge systems, AA-enabled simulation/modelling of formulations
- Strong focus on automation for **G&A functions**, e.g., digital performance dashboard in finance, automated fraud detection in auditing and no-touch time reporting system in HR

EXHIBIT 6

**Total potential at stake depends on 3 main considerations**

- **Time perspective:** Till when are you planning your digital roadmap, e.g., 2020 vs. 2030?
- **Starting point:** How far along are you already today with AA and automation?
- **Competitive environment:** How fast and how intense are your competitors in their digitization?



## Possible enablers for success

Chemical companies are struggling to find the right setup to maximize the potential of digitization. Implementation is no easy feat as it requires companies to find and adopt what is often a completely different way of working. Possible success factors to consider include:

- **Treating it as a transformational effort, not a project.** This could require a fundamental, long-term change in the way companies currently work. Digitization should be pervasive in all that a company does, and not merely in a few of its initiatives
- **Combining the right expertise, both from the domain and the digital side.** Historically, it can be seen that the “colliding” of insights results in, by far, the best opportunities. Value addition comes from combining data analytics and new technologies with domain (business/functions) and transformation expertise; having only one type of expertise may not suffice
- **Defining a few high-impact yet implementable lighthouse projects.** These allow the organization to showcase success quickly, while learning to build skills and expanding infrastructure at the same time. It is important to keep these lighthouses close to the business (and not carve them out) to leverage the insights, skills, etc., across the company later
- **Building the right skills and developing the right organization.** Data, analytics, infrastructure, etc. may require different profiles from what is typically seen in a chemical company

What does all this mean? Essentially, it means that digital is *not* about the implementation of the next tool. It is a trigger to change mindset and behaviour across the whole organization. Chemical companies implementing a number of solution suites without a holistic capability-building and change program could fail. Most importantly, end-to-end digitization could only work if it involves an entire business from end-to-end. The customer needs must come first, and digital must embrace the company’s functional domains.

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Digitization could play an important role in the way companies reinvent themselves in the near future. Advanced analytics, automation, end-to-end process optimization, and connectivity and sensing are the four technologically-based drivers that are creating and pushing the need for change. They could enable functional optimization, generate opportunities for entirely new businesses, potentially disrupt entire business systems and produce new value pools in the chemical industry.



# Digital in manufacturing: Hype or hope?

In their eternal quest to boost productivity, industry players are looking beyond traditional productivity levers. Digital technologies in manufacturing represent a new opportunity—promising to transform the landscape as rapid access to information redefines the “possible”. Industry leaders are seeking new ways to capture the relevant data and use it to speed up innovation, improve efficiency and customize products as per customer needs. This heralds a shift in the way companies view digitization, from being a cost and execution vehicle to an engine for growth innovation and revenue.

Indian manufacturing saw a surge in total factor productivity growth (a technical measure of an economy’s technological dynamism) during the mid- to late-2000s. Since then, however, Indian productivity has trended downward, with the productivity of labour and capital resources both showing similar trends of stagnation and decline. While this productivity slowdown has also hit advanced economies, the most digitized sectors in the US and Europe have shown the largest productivity gains, suggesting a correlation between digital capabilities and corporate incomes. Most likely, the big differentiator between the most successful companies and the rest will be the deployment of digital capabilities in operations<sup>10</sup>.

## Digitization: A shot in the arm for manufacturing

Digital advances in manufacturing have the potential to connect billions of machines in a new, smart ecosystem, an Industry 4.0. Machines are poised to become self-correcting and adaptive, enabling predictive analytics; IT architecture could be virtualized; and monitoring, maintenance and problem-solving could go mobile. This ecosystem is likely to be shaped over the next decade by four disruptive technologies:

- 1. Internet of Things (IoT) nodes:** A significant decline is expected in the price of integrated design solutions, leading to their increased use. IoT is finding use in various applications, such as condition-based maintenance (CBM), real-time production dashboard and supply chain optimization
- 2. Human-machine interaction:** A multinational technology firm developed an optical glass using augmented reality (AR). Applications on this glass show location-based instructions to workers (e.g., directions about where to go, how to complete a task). It has potential applications in setting up more efficient warehousing or in providing remote assistance for plant maintenance, etc.
- 3. Additive manufacturing:** An automobile giant used additive manufacturing to create a fuel nozzle for its flight engines that is five times more durable and 25 percent lighter than earlier prototypes
- 4. Analytics and intelligence:** Advanced analytics is being used to improve output in all kinds of industry. It could be classified broadly to provide two kinds of solutions: first, to optimize yield, energy and throughput to maximize total profit per hour; and second, to predict and avoid failures.

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<sup>10</sup> Given that firms take eight to 10 years to realize benefits from technology and capital gains, the surge was due to the growth of capital investment in the 1990s after liberalization. This paragraph draws inspiration from *Productivity boost key to a robust manufacturing sector*, by McKinsey authors Rajat Dhawan, Ashok Kumar and Sree Ramaswamy, an op-ed in *Business Standard*, 27 January 2017

## Embracing digitization to create value: Key learnings and use cases

The McKinsey Industry 4.0 Global Expert Survey of 2016 found that implementation was a real challenge for all manufacturers, whatever their level of progress on getting to Industry 4.0. Concerns ranged from coordination challenges across organizational units to inability to create a strong business case to invest in the required IT architecture to concerns about cybersecurity or data ownership, or, even simply, the lack of courage to push through the transformation.

Chemical companies looking to leverage digital technologies could learn from what successful manufacturers have done:

- Focused efforts on a limited number of high-value applications rather than trying to do everything at the same time. It was useful for them to identify their biggest value drivers and develop an Industry 4.0 roadmap
- Adopted both short-term “workarounds” and longer-term infrastructure solutions. Rather than waiting for a full-fledged IT transformation, many manufacturers overcame operational hurdles with quick, practical solutions that help for the time being. Of course, they also continued investing in building a solid foundation for a large-scale roll-out of new IT architecture
- Built a portfolio of third-party technology providers. Manufacturers clearly identified which capabilities and data to keep in-house and which ones to outsource, investing in managing a best-of-the-breed provider structure for effective IT systems
- Built a strong internal team with an “agile” mindset, which could help to drive innovation through a culture of change and experimentation
- Experimented with new business models to identify the best fit for digital integration and data-driven services.

As a first step, chemical companies could identify the most significant value drivers for their context, and enhance these using digital technologies for distinct impact (Exhibit 7).

### Examples of impact: Relevant use cases

Various industries offer inspiring examples or use-cases across these value drivers:

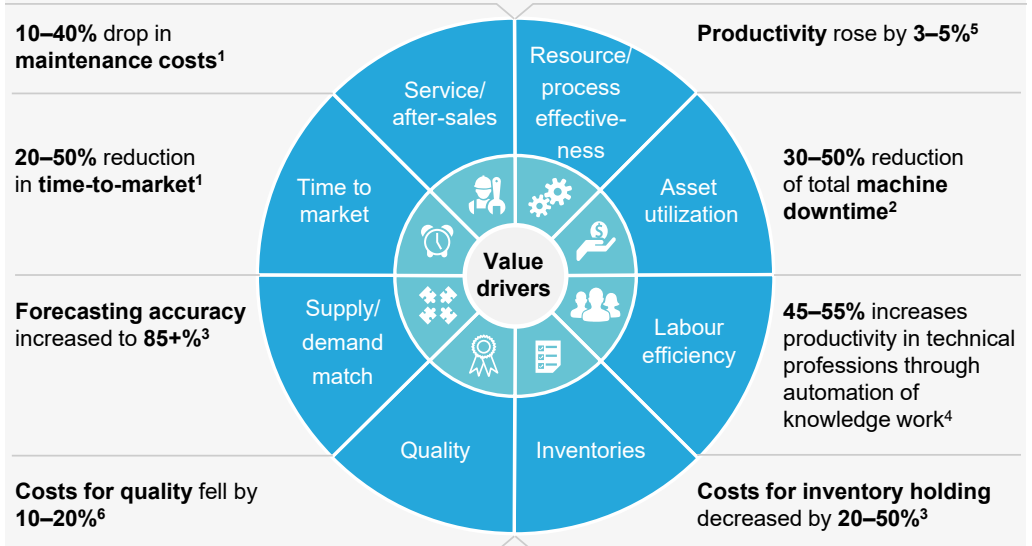
- **Equipment/plant effectiveness:** Digital performance management has resulted in the smarter use of data to drive timely decisions. It ensures improvement on an ongoing basis rather than merely capturing data in log books and using it in a reactive way to address abnormalities<sup>11</sup>
- **Resource/process effectiveness:** Continuous monitoring and automatic optimization of processes help to improve a specific output variable, e.g., throughput, energy, raw material yield or profit per hour. For example, the optimization of key parameters affecting yield at a Middle Eastern petrochemicals plant resulted in a 3 to 4 percent increase in profit per hour. Applying advanced analytics at a chemical plant helped to reduce material waste by 20 percent and energy expenditure by 15 percent

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<sup>11</sup> PCUBED: A turnkey performance management system developed as a part of McKinsey Solutions

EXHIBIT 7

**Each value driver can have significant impact**



1 McKinsey Global Institute: Big data: The next frontier for innovation, competition and productivity, 2011

2 Leading global automotive OEM

3 McKinsey on SCM

4 McKinsey Global Institute: Disruptive Technologies

5 ABB

6 Bauernhansl, Thomas, ten Hompel, Michael, Vogel-Heuser, Birgit (Hrsg.): Industrie 4.0 in Produktion/Automatisierung/Logistik (2014)

■ **Asset utilization**

- A few auto manufacturers have adopted CBM to increase asset utilization through more accurate planning, minimizing quality issues, etc.
- Demonstrated benefits in different industries include reduction in downtime, savings in operational expenditure, drop in maintenance spend, cut in failure cost

■ **Quality improvement**

- A global car original equipment manufacturer (OEM) uses advanced analytics along with an automation software to decrease quality issues in production
- A printing ink manufacturer with a portfolio of around 1,000 ink components and 10,000 formulations automated its processes, which improved quality and stability significantly and enabled easier compliance with regulations.

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Rather than mere hype, the digital or smart factory represents the hope for a new manufacturing landscape. Companies can identify the right opportunities for their industry and pinpoint the most effective levers to resolve their specific challenges. Digitization could offer a smoother, faster and more cost-effective transition to Industry 4.0.



# HR: The HeRo of the future organization

Disruption is the new normal in our world. The economic centre is shifting; new technologies are finding takers at an incredible pace; the demographics of advanced economies are set to soon look very different; and Asia and the Middle East are the newer, more prominent trade hubs, shifting traditional trade routes and forging new global interconnections. With innovation emerging as the need of the hour to adapt to this new normal, the human resource (HR) function of organizations can play a pivotal role in equipping companies with agility to survive, and even flourish, in a world of flux.

## Disruption: Fast and furious

Four macro-level disruptive forces are changing conventional ways of doing business<sup>12</sup>:

- Rapid industrialization and urbanization in emerging economies are shifting the economic centre of gravity
- Widespread adoption of new technologies is making old companies obsolete
- The population, especially in advanced economies, is expected to age
- Trade routes are growing more complex in today's world, with increased south–south and south–north trade

## HR as the hero

Given the rapid pace of change and the imperatives for innovation, organizations have little choice but to be nimble, flexible and adaptable. Facilitating this transformation is an opportunity, if not an obligation, for HR. The onus is on HR to:

1. Increase speed and stability to achieve agility
2. Apply data and analytics to address important questions around talent
3. Push leaders towards the highest bars, constantly
4. Tear the organization away from the mundane and the routine
5. Infuse an electric energy to drive high performance.

### 1. Achieve agility

The business world is coping with volatility, uncertainty, complexity and ambiguity (VUCA). Its path to survival lies in faster learning and smarter governance, both of which rest on agility. Agile organizations are 30 percent more productive, have a 90 percent shorter time to market, and have a leaner headcount by 30 percent<sup>13</sup>. For long, agility has been seen as a choice, with stability and scale, on the one hand, and speed and flexibility, on the other. But now the future is already here. Organizations like Haier, Spotify, Google and Buurtzorg exemplify how agility can foster resilience and growth. Spotify has multiple “squads” or self-managed teams, as does Buurtzorg, where 9,000 nurses are structured into self-managing teams of 10 to 12 nurses each<sup>14</sup>.

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<sup>12</sup> *No ordinary disruption: The four global forces breaking all the trends*, James Manyika, Jonathan Woetzel and Richard Dobbs, 2015

<sup>13</sup> McKinsey Organization Design Service

<sup>14</sup> Examples collated through a press search and expert interviews

## 2. Apply data and analytics

While people analytics can serve as the foundation for any strategy, few organizations tap this resource. This is a pity, because 43 percent of companies on the Fortune 1000 list have people analytics functions, and companies that base decisions on data enjoy 30 percent higher returns over the S&P 500<sup>15</sup>. Google uses analytics and data to cut recruiting spend and errors by 25 to 50 percent. SAP saves 3 to 5 percent of labour costs by using granular data to predict day-to-day demand. HCL improves knowledge access to save its knowledge workers 19 percent of their time.

## 3. Enhance leadership

Behaviours drive performance and performance drives behaviours. It is never too late to learn most new things, so nurturing mindfulness and investing in emotional learning can help to create a transformed leadership that galvanizes the organization.

## 4. Transform the organization

HR can help motivate leaders and workers to break away from their routine by inculcating a sense of purpose, encouraging a quest for mastery and providing greater autonomy. The “show, tell, teach or encourage” influence model can be the key to driving proactive organizational shifts:

- **Show** by role modelling the difference in behaviours
- **Tell** by communicating a compelling change story and an inspirational vision
- **Teach** new skills and give opportunities to exhibit new behaviour
- **Encourage** by removing barriers and rewarding changemakers

## 5. Infuse energy

Naps are recommended! Contrary to popular perception, energy, rather than time, is the fundamental currency of high performance. Rest enables a cleansing and flushing of the toxins that weigh down the brain, creating alert, mindful and centred individuals who can create the vibrant, agile and innovative organizations of the future.

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Change is the only constant, and never has this been truer than in our dynamic, fast-moving world. Keeping up with change requires organizations to embrace agility. HR could step in and save the day.

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<sup>15</sup> Press search and expert interviews

# Chemicals Practice leaders: India and overseas



**Abhiram Ramprasad**  
Engagement Manager  
Chicago



**Neelesh Mundra**  
Partner  
Mumbai



**Amala Gupta**  
Associate  
Mumbai



**Nitika Nathani**  
Engagement Manager  
Delhi



**Ashok Kumar**  
Senior Expert  
Delhi



**Noshir Kaka**  
Senior Partner  
Mumbai



**Avinash Goyal**  
Partner  
Mumbai



**Pinak Dattaray**  
Engagement Manager  
Delhi



**Chandrika Rajagopalan**  
Associate Partner  
Mumbai



**Ramesh Mangaleswaran**  
Senior Partner  
Chennai



**Darshit Gandhi**  
Engagement Manager  
Mumbai



**Saagar Sinha**  
Engagement Manager  
London



**Florian Budde**  
Senior Partner  
Frankfurt



**Sheng Hong**  
Partner  
Shanghai



**Francesco Zerbato**  
Associate  
Mumbai



**Shirish Sankhe**  
Senior Partner  
Mumbai



**Jakob Fischer**  
Senior Partner  
Munich



**Suyog Kotecha**  
Partner  
Mumbai



**Jens-Christian Blad**  
Senior Expert  
Hamburg



**Tarun Agarwal**  
Engagement Manager  
Delhi



**John Warner**  
Senior Partner  
Cleveland



**Theo Jan Simons**  
Partner  
Cologne



**Karthikeyan K.S.**  
Expert  
Mumbai



**Ulrich Weihe**  
Partner  
Frankfurt



**Katsuhiro Sato**  
Partner  
Tokyo

# Notes



