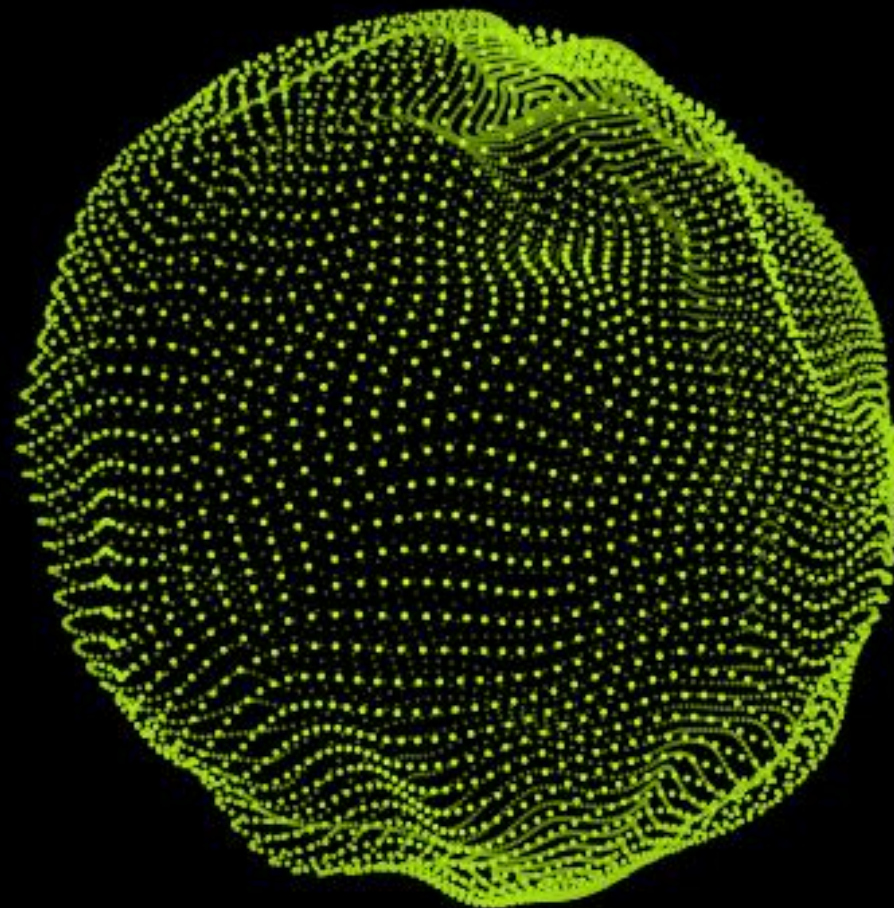


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Global Digital Chemistry
Survey quantitative findings
2016 May-June period – Extract

Foreword

Historically a slow adopter, the Chemical industry is being challenged by the pace of Digital and the need for Innovation



Innovation imperative

- Even more true in the current challenging business environment for Chemical manufacturers, innovation is critical to continue to grow and differentiate
- To cope with the historical lag between innovation and implementation, digital and exponential technologies enable acceleration



Incremental and disruptive mix

- Digital is not new for Chemical manufacturers with a focus historically on incremental approaches ; the innovation portfolio could be more balanced to address existing core & future transformational businesses
- Today's major concern is to identify any blind spots or disruptions from digital trends



Scaling up of initiatives

- Chemical players have launched numerous digital initiatives across businesses and geographies
- The key is to move from project to enterprise-wide initiatives to justify higher investments



Organizational agility & flexibility

- The current structure and processes organizations deploy are being challenged especially in the chemical industry to foster continuous innovation beyond product innovation, and collaboration internally and externally



Not only economic but also social benefits

- Considering that the chemicals industry is facing both an image deficit and a talent challenge, digital is a major lever to attract, develop and retain talent, and to engage all stakeholder groups

Summary

Digital sophistication and maturity

Chemical players are at varying maturity stages of their digital transformation journey

Voice of the Industry – Quantitative analysis

Strategy & Innovation

- **Almost 40% of executives** want their company to be **digital trailblazers (or disrupters)** by outperforming the industry average over the next 3 years
- Companies approach digitally-driven ecosystems differently leading to various innovative responses in near future - the **adoption of open and semi-open platforms are underdeveloped** beside Innovation & ICT enablement
- However, **more than 50% of companies lack a digital strategy & transformation roadmap** creating a major challenge to overcome

Agility & Transformation

- **Organizational agility (55%) and flexibility (39%) are the biggest barriers** to enable digital transformation and disruption
- **Current digital responsibilities are challenged** – significant shift expected from IT to the business with corporate guidance (CEO/COO)
- **Lack of change management components** designed to help executives embrace the digital agenda
- The **critical role of cyber security and strategic alliances have not yet been fully recognized** to make the most of digital

Performance & Scalability

- Most companies (75%) currently appear to be focusing on **digital initiatives for incremental, organic growth and margin improvement**
- **Short-term focus on sales activation & customer experience**, commercial & supply chain efficiency ; Mid-term focus new business development and asset intelligence
- **Predictive Analytics, Sensors and Controls** are the main technologies perceived for growth & operation (IoT trends)
- Some companies are **underestimating cyber threats (22%)**, not having performed any risk assessment in the past 12 months

Image & Talent

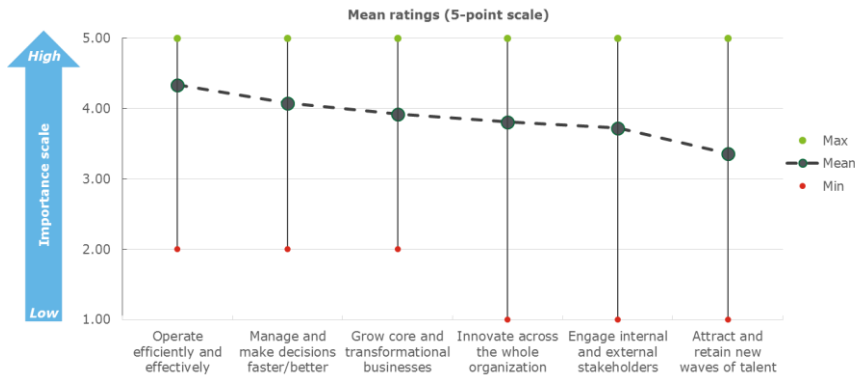
- Digital initiatives are **primarily focused on the immediate economic value** – contrasted maturity towards internal/external social benefits
- Most executives **advocate digital engagement potential for customers but lack perspective across other stakeholder groups**
- **Proprietary digital channels** (Websites, Mobile apps) are preferred to engage customers – social platforms are less common (34%)
- **Facebook and Twitter (and their regional equivalents) are leading social media platforms** to engage customers & other stakeholders – B2B & B2C blurring boundaries

Note: ICT Information and communications technologies. Source: Deloitte 2016 Global Digital Chemistry Survey: 102 responding executives from more than 50 chemical companies over the May-June period

Digital opportunity and challenge

Most companies have launched a lot of digital experiments – but no evidence yet of true transformation to realize its full potential

Spectrum of digital initiatives



Note 1: Weighted mean has been calculated for each of the options.
 Note 2: Ratings range from "1" which means "Not at all important" to "5" which means "Extremely Important".

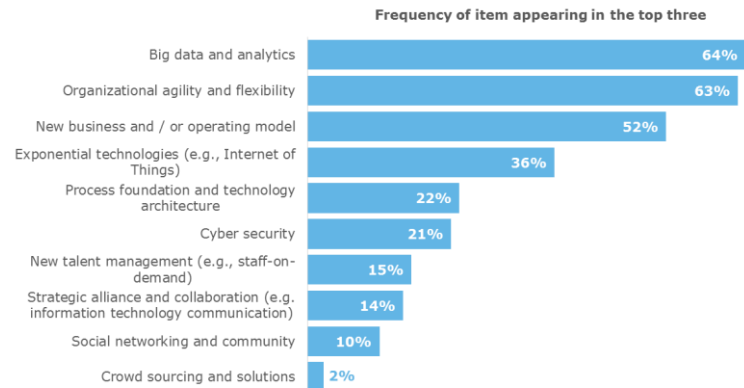
"When thinking about the future health and development of your company, how important are digital initiatives in the following areas?"

Most companies (75%) currently appear to be focusing on digital initiatives for incremental, organic growth and margin improvement – but already 40% consider new information-based business models

Strategy & Innovation

Almost 40% of executives want their company to be digital trailblazers (or disrupters) by outperforming the industry average over the next 3 years

Monetizing digital initiatives



Note: Percentage of respondents who ranked a capability as "1", "2" and "3" have been summed up together.

"What are the top three (3) capabilities required to monetize digital initiatives? Please rank in order of importance."

Only few capabilities identified e.g. the critical role of cyber security and strategic alliances have not yet been fully recognized to make the most of digital

Agility & Transformation

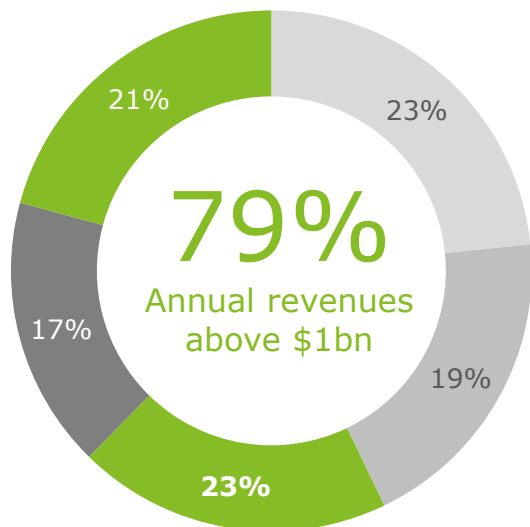
Current digital responsibilities are challenged – significant shift expected from IT (enabler) to the business (driver) with corporate guidance (CEO/COO)

Participants

Responding companies

102 respondents from a balanced mix of companies in terms of sizes, businesses and geographies (USA, EU and APAC)

Company size



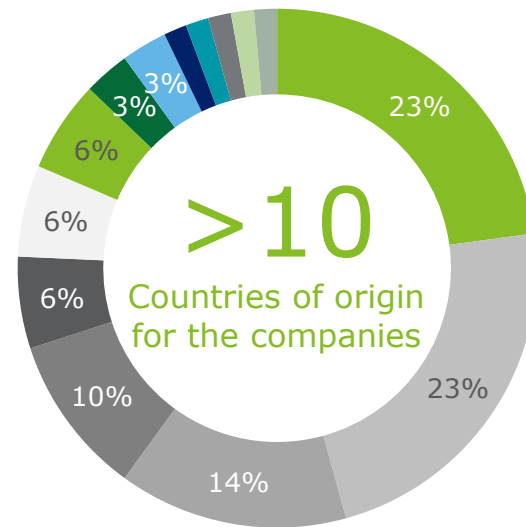
- More than US\$25 billion
- US\$10 billion to US\$25 billion
- US\$5 billion to US\$10 billion
- US\$1 billion to US\$5 billion
- Less than US\$1 billion

Business sector



- Solutions
- Petrochemicals
- Intermediates
- Fine chemicals
- Agrochemicals
- Distribution
- Industrial gases
- Conglomerates

Headquarters location



- United States
- China
- Japan
- Germany
- France
- Belgium
- Netherlands
- Australia
- India
- Austria
- Luxembourg
- Saudi Arabia
- Norway
- Switzerland

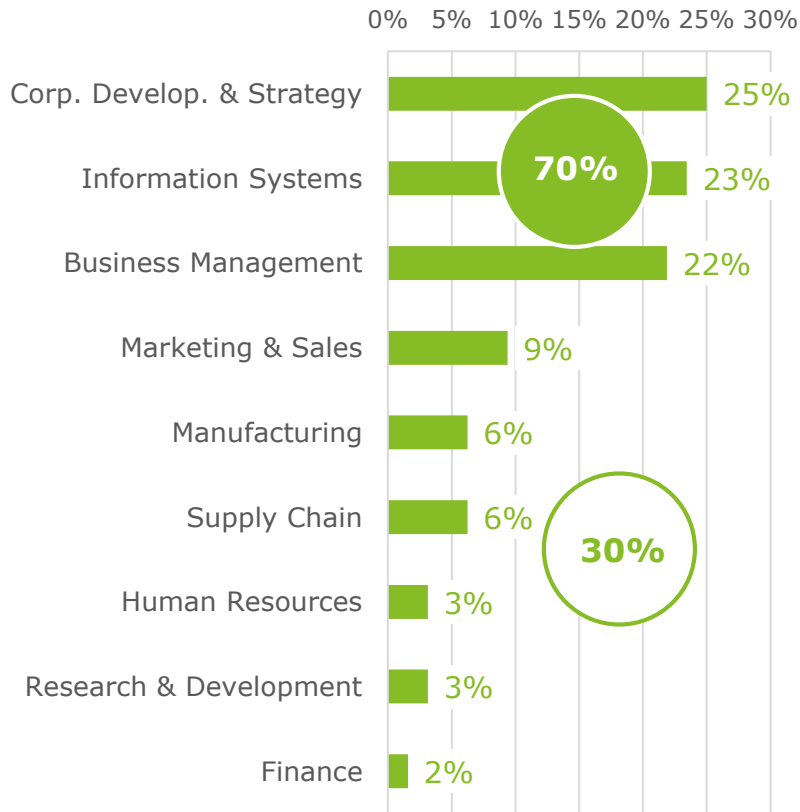
Note: Solutions combining specialty chemicals, coatings, plastics and composites. Conglomerates mixing Material & Life science and/or integrating the value chain.

More than 50 different chemical companies

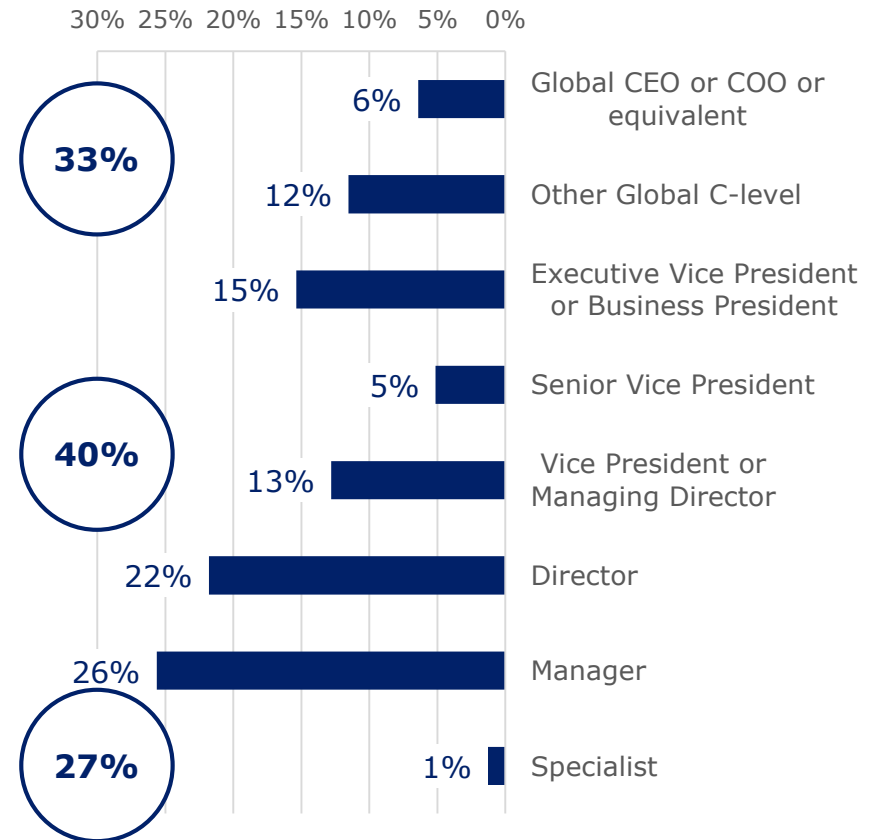
Responding individuals

Most respondents hold senior positions on a global or regional basis across corporate and business functions of the organization

Organizational function



Organizational responsibility



Most individual respondents have global (63%) or regional (25%) geographic responsibilities – the remaining being national

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Reports developed by Deloitte Global and its member firms

These selected reports can help to foster your thinking related to digital chemistry focused on four dimensions:

Global Chemical industry and trends



The chemical multiverse 2.0: The future of chemicals and advanced Materials



Driving innovation: Advanced materials systems



The feedstocks prism: Unveiling value in volatile and complex petrochemicals



End market alchemy: Expanding perspectives to drive growth in Chemicals

Digital strategy and ecosystems



Strategy, not technology, drives digital transformation



Industry 4.0 and the chemicals industry



Navigating a shifting landscape: Capturing value in the evolving mobility ecosystem



Form dirt to data: The second green revolution and the Internet of Things

Exponential technologies and capabilities



Ten types of innovation: The discipline of building breakthroughs



2016 Technology Trends: Innovating in the Digital Era



3D opportunity and the digital thread: Additive manufacturing ties it all together



Safeguarding the IoT: Being Secure, Vigilant, & Resilient in the Connected Age

Digital transformation and talent



The talent imperative in the global chemicals industry



Building your digital DNA: Lessons from leaders



Aligning the organization for its digital future



3D opportunity for engineers: Using behavioral insights to build a new mindset



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