If machines and products become more connected, what does the future look like for global manufacturers?

By 2020 there will be a projected 30 billion connected “things” and a revenue opportunity of USD 1.7 trillion for the ecosystem.

IDC: Worldwide Internet of Things Forecast, 2015-2020 (IDC#256397)

Only 1 in 5 manufacturers are demonstrating high levels of maturity in both smart products and smart factories.

KPMG: i4.0 maturity assessment study, 2017

<table>
<thead>
<tr>
<th>Industrial revolution</th>
<th>The advent of cyber physical systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Steam, water, mechanical production equipment</td>
</tr>
<tr>
<td>2nd</td>
<td>Division of labor, electricity, mass production systems</td>
</tr>
<tr>
<td>3rd</td>
<td>Electronics, IT, and automated production</td>
</tr>
<tr>
<td>4th</td>
<td>Cyber-physical systems – integrated and interconnected</td>
</tr>
</tbody>
</table>

Technologies enabling the i4.0 movement

- Robotics
- Cloud
- Machine-to-machine
- Digital twinning
- AI & virtual reality
- Data & analytics

What is i4.0 … and the potential opportunities and risks?

Industry 4.0 (i4.0) is a shift from digitization to cyber-physical systems through integrated and interconnected technologies such as Internet of Things (IoT), robotics, big data and augmented decision support.

**Pitfalls to avoid include:**
- Underestimating the importance of people e.g. limited planning to retrain existing workforce or find high-tech talent;
- Adopting new technologies without tying them to strategic business objectives or knowing their expected ROI;
- Insufficient cyber security; and
- Lack of strong, enterprise-wide governance structure

**Potential benefits include:**
- Greater flexibility to adapt to customer demands;
- Enhanced speed to market/client centricity;
- ‘Competitive edge’ with smarter products;
- New revenue streams from aftermarket services; and
- Enhanced business models to avoid being disrupted
Boardroom Questions

1. How different do we imagine our manufacturing facilities will look in the next 5-10 years in light of rapidly increasing 4.0 technologies (e.g., advanced automation, IoT, artificial intelligence, etc.)?

2. How are we addressing innovation and disruption in our sector?

3. Have we considered new revenue streams or business models based on ‘smart product’ initiatives?

4. How well have we integrated supply chain partners to speed up products to market, lower manufacturing risk and improve connected products?

5. How confident are we that we are getting adequate return on our 4.0 investments?

6. What criteria are we using to decide which 4.0 technologies to invest in?

7. What ‘Smart Factory’, ‘Digital Factory’ or ‘Industry 4.0’ initiatives are already underway at our organization?

8. How are we encouraging successful 4.0 pilots/initiatives to be shared/embraced across our enterprise?

9. How is the move towards new 4.0 technologies being received in our organization (e.g., with skepticism or seriousness)?

10. Given the rapid advances in 4.0 technologies, what initiatives are we engaging in to attract/retain and support the workforce of the future?

11. How confident are we that our connected factories, supply chains and product data are secure from cyber-attacks?

Questions for senior management

1. How can we grow our market share?

2. Is our operating model fit for purpose?

3. How do we improve our productivity and dramatically impact our cost curve?

4. What does our 4.0 roadmap look like?

5. What are the expected returns on our 4.0 investments?

6. How do we ensure successful 4.0 pilots are adopted across the wider enterprise?

7. What is our competition doing?

What actions can the Board consider?

1. Take stock of what 4.0 pilots/initiatives are already underway and determine criteria for scaling them across the enterprise

2. Conduct an 4.0 maturity assessment and benchmarking

3. Hold an innovation workshop to enable a strategy and performance-led 4.0 road-mapping

4. Appoint an 4.0 leader or steering committee to ensure enterprise-wide, holistic 4.0 adoption, addressing governance, people, risk, etc

Contact

KPMG AG
Räffelstrasse 28
PO Box
8036 Zurich

Christoph Wolleb
Partner
Advisory, Operations Consulting

+41 58 249 54 97
cwolleb@kpmg.com

kpmg.ch/blc

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received, or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation. The scope of any potential collaboration with audit clients is defined by regulatory requirements governing auditor independence. If you would like to know more about how KPMG AG processes personal data, please read our Privacy Policy, which you can find on our homepage at www.kpmg.ch.

© 2019 KPMG AG is a subsidiary of KPMG Holding AG, which is a member of the KPMG network of independent firms affiliated with KPMG International Cooperative («KPMG International»), a Swiss legal entity. All rights reserved.

Boardroom Questions November 2019