Leading the Digital Enterprise

• How Artificial Intelligence will redefine management
  Vegard Kolbjørnsrud, Assistant Professor, BI Norwegian Business School Senior Research Fellow, Accenture

• Break

• Building a culture for trial and error at FINN.no
  Anders Skoe, CEO Finn.no

• Strategy as disciplined experimentation
  Vegard Kolbjørnsrud

• Discussion
Entering the age of intelligent machines

- The rise of Artificial Intelligence (AI) and robotics is predicted to drive the biggest technology disruption in the workplace since the Industrial Revolution
  - 33-50% of jobs estimated to be computerized
- Prior waves of new technology in the workplace have mainly impacted workers, rather than managers
- This is different. Artificial intelligence will radically change knowledge work incl. core management tasks

Source: Brynolfsson and McAfee (2014), Frey and Osborne (2013), Kirby and Davenport (2016)
Artificial intelligence combines multiple technologies into applications that can sense, comprehend, act, and learn.

### Artificial Intelligence defined

<table>
<thead>
<tr>
<th>Description</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense</td>
<td></td>
</tr>
<tr>
<td>Applications that can observe and register their environment, people, and data</td>
<td>Computer vision, Audio processing, Sensor processing</td>
</tr>
<tr>
<td>Comprehend</td>
<td></td>
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<tr>
<td>Applications that can discern context, detect patterns, and make inferences</td>
<td>NLP: Natural Language Processing, Knowledge representation, Affective computing</td>
</tr>
<tr>
<td>Act</td>
<td></td>
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<tr>
<td>Applications that can signal decision situations, make recommendations, express themselves, and potentially act autonomously</td>
<td>Inference engines, Expert systems, NLP: Natural Language Generation, Predictive analytics</td>
</tr>
<tr>
<td>Learn</td>
<td></td>
</tr>
<tr>
<td>Applications that can adapt based on accumulated knowledge and experience</td>
<td>Machine learning/pattern recognition</td>
</tr>
</tbody>
</table>

Are you ready for a machine on your leadership team?

- In 2014 the Hong Kong VC firm appointed the intelligent algorithm VITAL* to its board and gave it voting rights in investment decisions
- Has voted on a number of investments

- How will artificial intelligence impact managers' work?
- What are the actions managers and employers must take to fully integrate the power of artificial intelligence into their organizations?

Source: fastcompany.com
Managers spend most of their time on tasks that intelligent machines will do in the future

Time spent on categories of management tasks

- **Coordinate & control**: 53%
- **Solve problems & collaborate**: 30%
- **People & community**: 7%
- **Strategy & innovation**: 10%

What's special about this financial news article?

It is written by an intelligent reporting engine

...would you like it to draft your next management report?

MOUNTAIN VIEW, Calif. (AP) — Google parent Alphabet on Monday reported a jump in first-quarter net income on the back of strong digital ad sales and an accounting adjustment.

The Mountain View, California-based company’s net income surged 73 percent to $9.4 billion, or $13.93 per share. Earnings, adjusted for non-recurring gains including those from the accounting change, were $9.93 per share.

The results beat Wall Street expectations. The average estimate of 13 analysts surveyed by Zacks Investment Research was for earnings of $9.21 per share.

The internet search leader posted revenue of $31.15 billion in the period. After subtracting Alphabet’s advertising commissions, revenue was $24.86 billion, also beating Street forecasts. Eleven analysts surveyed by Zacks expected $24.2 billion.

Still, Google’s sunny quarter comes amid the backdrop of looming privacy regulations in the U.S. and Europe.

Elements of this story were generated by Automated Insights (http://automatedinsights.com/ap) using data from Zacks Investment Research. Access a Zacks stock report on GOOGL at https://www.zacks.com/ap/GOOGL.
AI helping you write your management report is closer than you think…

Example: Tableau and Narrative Science partnering to provide narratives for data charts
The greater the presence of machines, the greater the need for human judgement

People power

- Some decisions and practices require insight beyond what information can tell
- This is the sweet spot for human judgment

Managers recognize need for digital, creative, and analytical skills – ignoring people skills?

New skills needed to succeed*

**Global**
- Digital/technology: 42%
- Creative thinking and experimentation: 33%
- Data analysis and interpretation: 31%
- Strategy development: 30%
- Planning and administration: 23%

**Nordics**
- Digital/technology: #4 30%
- Strategy development: #1 32%
- Data analysis and interpretation: 23%
- Planning and administration: 18%

<table>
<thead>
<tr>
<th>People skills</th>
<th>Global</th>
<th>Nordics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social networking</td>
<td>21%</td>
<td>#2 31%</td>
</tr>
<tr>
<td>People development and coaching</td>
<td>21%</td>
<td>#2 31%</td>
</tr>
<tr>
<td>Collaboration</td>
<td>20%</td>
<td>#7 25%</td>
</tr>
<tr>
<td>Quality management and standards</td>
<td>20%</td>
<td>14%</td>
</tr>
<tr>
<td>Sharpen skills within my current domain of expertise</td>
<td>20%</td>
<td>17%</td>
</tr>
<tr>
<td>Performance management and reporting</td>
<td>17%</td>
<td>#6 26%</td>
</tr>
</tbody>
</table>

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

* Which new skills will someone need to learn in order to succeed in your role in five years’ time? Please select up to 3 skill areas.
AI stirs both excitement and fear

**Opportunity**

"Will make my work more effective and interesting"

- Somewhat agree 45%
- Strongly agree 39%

**Threat**

"I fear that intelligent systems will threaten my job."

- Somewhat agree 23%
- Strongly agree 13%

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

* Intelligent systems will help me to become more effective in my work and focus more on interesting and impactful tasks.

** I fear that intelligent systems will threaten my job.
Lower level managers are much more skeptical about taking advice from machines than their bosses

Trust in and comfort with…

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
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<tbody>
<tr>
<td><strong>&quot;Trust system advice in business decisions&quot;</strong></td>
<td></td>
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<tr>
<td>Top managers</td>
<td>46%</td>
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<tr>
<td>Middle managers</td>
<td>24%</td>
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<tr>
<td>First-line managers</td>
<td>14%</td>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>&quot;Comfortable with intelligent system monitoring and evaluating my work&quot;</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td>26%</td>
</tr>
<tr>
<td></td>
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</tr>
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* I would trust the advice of intelligent systems in making business decisions in the future (e.g. an investment decision or deciding whom to hire or promote).

** I am comfortable with an intelligent system monitoring and evaluating my work.
Are managers in developed countries so skeptical that they will be leapfrogged by emerging economies?

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

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Managers want machines to explain their logic before they will accept it

What it takes to trust artificial intelligence

What would allow you to trust system advice?*

- I understand how the system works and generates advice: 61%
- The system has a proven track-record: 57%
- The system provides convincing explanations: 51%
- People I trust use such systems: 33%
- Advice is limited to simple rule-based decisions: 33%
- Nothing would allow me to trust advice generated by an intelligent system: 6%

Source: Kolbjørnsrud, Amico, Thomas (2017) "Partnering with AI: how organizations can win over skeptical managers," Strategy & Leadership, 45(1)

* What would allow you to trust advice generated by an intelligent system? (Choose up to three)
Developing the capabilities of the intelligent organization

The SCALE framework

Sense
- Observe | Register

Comprehend
- Discern | Detect | Infer

Act
- Decide | Make | Do

Learn
- Adapt | Improve

Explain
- Show | Clarify | Direct

Source: Andersen, Sannes, Johnson, Kolbjørnsrud (forthcoming) “The data-driven organization: intelligence at SCALE”
Steps to success
Leaders must be prepared for technology to take on more routine tasks

- Explore early, **experiment and engage** with new technology and pilots – together
- **Automate administration** and focus on **judgment work**
- Develop **training and recruitment strategies** for creativity, collaboration, empathy and judgment skills
- Start building **the intelligent enterprise**—combine AI and collective human intelligence for optimal outcomes