Artificial Intelligence and Marketing

Mohammad B. Rana, PhD, MBA, MSc
Associate Professor of International Business and Strategy
International Business Centre
Aalborg University
OUTLINE

1. Background AND understanding of AI and the technological variations in it.

2. Use of AI in different areas of business and marketing, with examples.

2. Progress of AI in the World and especially in EUROPE

4. Value creation by AI

5. Challenges and opportunities of AI
BACKGROUND OF AI

- AI is founded on machine learning (+deep learning) and connectionist systems that performs as an autonomous system instead of a static human supported program.

- This complements human’s ability and limitations in gathering information, processing, presenting, decision-making, reacting, and interacting.

- Not only solving the given problem or illustrate the current trends/patterns or respond to requests and enquiries by customers but also draw futuristic inferences and act upon them with higher efficiency like a long-term vision and system that would mimic human works, thoughts, behavior and take actions.
The degree to which AI is supported by huge amount of high quality dynamic DATA, sophisticated algorithm, and trained adequately.
## USE OF AI IN DIFFERENT AREAS OF BUSINESS AND MARKETING

<table>
<thead>
<tr>
<th>SECTORS</th>
<th>USE CASES</th>
<th>APPLICATIONS</th>
<th>EXAMPLES</th>
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<tbody>
<tr>
<td><strong>Financial Management</strong></td>
<td>Stock trading</td>
<td>An intelligent agent predicts the performance of a given stock based on the current and past stock movement.</td>
<td>Kavout; Merrill Lynch</td>
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<td>Fraud detection</td>
<td>Based on large volumes of customer data, together with transactional data that is updated as transactions occur, AI can be used to effectively identify credit card behavior patterns that are irregular for specific customers.</td>
<td>Danske Bank with Teradata</td>
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<td>Credit risk assessment</td>
<td>This is more of a classification type problem well suited to machine learning techniques.</td>
<td>Ping An Puhui</td>
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<td>Recruitment</td>
<td>AI-enabled systems can scan vast amount of applications far more quickly than humans and work out whether candidates are a good fit.</td>
<td>Johnson &amp; Johnson with HiredScore</td>
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<td><strong>Human Resource Management</strong></td>
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<td><strong>Marketing and Sales</strong></td>
<td>Personalized pricing</td>
<td>AI can automatically change prices in real time based on supply and demand. Also, it can offer personalized price by analysis based on how much the users are willing to pay.</td>
<td>UBER, Lyft, Amazon</td>
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<td>Customer Service</td>
<td>AI can assist customer service agents by enabling intelligence auto reply, answering fewer complex queries, sorting and organizing email inquiries etc. Automated call centers often request the ability for an intelligent system to be able to understand a user’s request and make every effort to fulfil that request.</td>
<td>KLM</td>
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<td>Product recommendation</td>
<td>Many people shop online each day, and retailers are able to preserve the history of purchases for each shopper and use AI to make recommendations of products that may also be of interest to them.</td>
<td>Nordea Bank with Amazon Alexa</td>
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<td><strong>Manufacturing and operation</strong></td>
<td>Defect identification</td>
<td>It is possible to determine manufacturing flaws using machine vision and machine learning techniques.</td>
<td>Siemens; NVIDIA</td>
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<td>Energy Management</td>
<td>Comprising IoT sensors collecting data in real time, big data analytics and artificial intelligence, the solution can identify energy savings opportunities and reduced energy consumption.</td>
<td>Al Thuraya Tower 1</td>
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Rana et al. 2018
Technological Combinations of AI-based solutions

**Character Variations of AI**
- **Detect**: Develop data-driven attributes or themes for a given area
- **Deliberate**: Based on relevant themes, AI predicts and/or provide recommendation
- **Develop**: Draw judgement and develop capability to reprogram itself

**AI Technologies**
- Data from Smart-connected devices and sensors
- Social Media Data
- Internet Data
- Image Recognition
- Audio Signal
- Optical and Neural Signal
- Biometric Data
- Pattern Recognition
- Natural Language Processing
- Knowledge Representation
- Machine Learning
- Decision Support Systems
- Expert Systems

**Illustrative Solutions**
- Social Bot and Virtual Agents
- Identity Analytics
- Speech Analytics
- Cognitive Robotics and Emotional Intelligence
- Recommendation Engines
- Human Assistant
- Advanced Analytics and Data Visualization

Rana et al. 2018
Differences in Technological Inputs - In Big Data

**Number + Text Data**

**Nonvisual Signals**

**Visual Signals**

**Persado Enterprise** uses custom language per brand including style, structure, vocabulary, and descriptions. You control, adjust and fine-tune the language generated to adhere to your brand ethos.

**Auto volume and noise adjustment. Based on inertial sensors and biomatric signals, real time health monitoring, control what you hear, auto-care from fall, automatic reporting to medical centre/loving ones, natural language translation, blood sugar check etc.**

**Ping An Puhui**, a Chinese insurance company, is using similar AI to evaluate creditworthiness of their customers through video application, AI customer service, AI Good doctor, AI Auto Insurance payment etc.
DIFFERENCES IN ORGANISATIONAL, MARKET, TECHNOLOGICAL AND INSTITUTIONAL CONDITIONS

Maturity of Organisational Actors & Customers

Maturity of Institutional and Business Eco Systems
(Law, education, habits, cognition, supporting industry condition, technological development in software and hardware)

Rana et al. 2018
VALUE CREATION BY AI: SCOUPIAS

Value for Firms:
- Speed
- Cost Competitiveness
- Optimization of Process

Value for Customers:
- Interactiveness
- Personalization
- Unique Feature
- Additional Utility
- Scope

Rana et al. 2018
AI WORLD OVER

TOP 10 COUNTRIES THOSE WHO ARE READY FOR AI AND AUTOMATION

1. South Korea
2. Germany
3. Singapore
4. Japan
5. Canada
6. Estonia
7. France
8. UK
9. US
10. Australia

SOURCE: THE ECONOMIST INTELLIGENCE UNIT 2018

Note: The research conducted in three main dimensions: innovation environment (money spent on research and development, and investment in the space), school policies (early education and lifelong curricula), and public workforce development (government-led programs, re-training of workers).
POTENTIAL ECONOMIC VALUE CREATION AREAS BY 2037

POTENTIAL ECONOMIC-VALUE CREATION FROM AI IN THE NEXT 20 YEARS (USD IN TRILLION)

SOURCE: MCKINSEY 2017
How much is invested in AI in Europe?

A few big AI transactions influencing the overall picture
Company AI investments in mUSD and transaction volume per market (accumulated 2008-2018)

FOLLOW THE MONEY - HOW MUCH INVESTED IN AI IN EUROPE

FIGURE BY: Ernest and Young, Denmark 2018, funded by Microsoft.
HOW AI IS PERCEIVED BY COMPANY STAKEHOLDERS IN EU

AI is an important topic on the C-suite level in particular
On what hierarchical levels in your company is AI an important topic?

STRATEGIC LEVEL

- Board of Directors level: 38%
- Executive Management level: 71%
- Managerial level: 56%
- Employee (non-managerial level): 28%

OPERATIONAL LEVEL

Affirmative responses, 15 European markets

Note: Survey on 277 major companies in EU

FIGURE BY: Ernest and Young, Denmark 2018, funded by Microsoft.
AGGREGATE CHALLENGES OF AI IN BUSINESS

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<th>Challenge</th>
<th>Percentage</th>
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<td>It's hard to integrate cognitive projects with existing processes and systems</td>
<td>47%</td>
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<td>Technologies and expertise are too expensive</td>
<td>40%</td>
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<td>Managers don't understand cognitive technologies and how they work</td>
<td>37%</td>
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<tr>
<td>We can't get enough people with expertise in the technology</td>
<td>35%</td>
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<td>Technologies are immature</td>
<td>31%</td>
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<td>Technologies have been oversold in the marketplace</td>
<td>18%</td>
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Source: Deloitte 2017
CASE 1: OFFICE-FIT. DK

*AI could serve the customers with regular customers health progress data and strengthen CRM:*

Over 20000 Uses, Over 200 institutinal customers
Having problem on how to retain them after three years of contract period.

Biomatrics data from the users were not collected and processed.

Dont know how to use them for Customer Relationship Development.
**CASE 2: ALFA LAVAL, DENMARK**

*AI can assist in such a complex case:*

When Boiler is out of order, ship informs to its subsidiary office, subsidiary procurement dept. sends an order to HQ procurement, and HQ procurement sends an invitation to THREE suppliers including ALFA LAVAL.

Whoever accepts the invitation first receives the order.
CHALLENGES AND OPPORTUNITIES IN MARKETING WITH AI

Deviating from World-Technology and Knowledge Driven Economy Vs Production Driven Economy

MORE

- Imagination
- Differentiation
- Customer Orientation
- Interactive Relationship
- Competition
- Convergence of Technology and Marketing knowledge
- Specialisation Focus
- Ethical Considerations
- Adaptation Challenge

Rana et al. 2018
Any questions?