Artificial intelligence, robots and SMEs: possibilities, problems and prospects

13th of February 2019

Artificial Intelligence – AI was a term coined in a conference back in 1956 in Dartmouth, USA, whose real growth has taken place in the last 10 years because of a phenomenon called deep learning and machine learning, which are architectures inspired by the human brains.

AI/machine learning involves computers processing large quantities of data to find patterns and make predictions without being explicitly programmed to do so, enabling computers to not only read text and numbers but to see, hear and speak. Data are being monitored by using very sophisticated algorithms and lots of customization to support the user in finding the right pattern.

By referring to current literature in the field, Prof. Jay Mitra, Professor of Business Enterprise and Innovation at the Essex Business School, University of Essex & Adviser to the Board at the Forum for Sustainable New Venture (United Kingdom), presented four examples in which AI is affecting day to day business:

- The Internet AI: large volumes of data from use of the internet, based on labeling of data. From this labeling, AI details profile of personalities, habits, demands and desires. It provides tailor-made content for a given platform;
- Business AI: algorithms trained on proprietary data (e.g. customers' purchases, machine maintenance records) which is constantly being analyzed and used for predictions for improved decision making;
- Perception AI: upgraded version characterized by various senses (hearing, eyesight etc.) and allowing new data capture or enabling new applications. Primarily through the use of sensors and smart devices.
- Autonomous AI: it integrates the 3 previous waves. It consists of machines able to sense and respond to the world by moving intuitively and manipulating objects without human intervention.

Among the most recent trends in the field, prof. Mitra pointed out Edge AI which is the direct ability to process information by smartphones, wearable devices and cars instead of communicating with a central cloud or server.

The marketplace for AI is increasing very rapidly. In 2018 the global AI market was around 7.35 billion US dollars while it is expected to be worth approximately 89.847,00 million US dollars by

2025. China dominates global AI funding: 48% is China equity funding share while 38% is the US one.

Prof. Mitra identified four ways in which AI is affecting day to day business:

1. On the fly translation technologies: enabling people to speak the same language. AI based services that translate on the fly.
2. Mind readers: non-invasive wearable devices that answer queries within seconds, send private messages and internally record streams of information to access later, without observable external actions.
3. Generative devices: software that produces hundreds of options based on designer inputting requirements, limitations or other qualities including cost of materials. As choices are narrowed down, the software figures out preferences to find better options.
4. Retail therapy: using data from millions of transactions to figure out extra needs; e.g. robots scanning shelves for out of stock items.

The small hi-tech firms are indeed the backbone of the worldwide development of AI. When it comes to SMEs, it is important to focus on what SMEs are primarily concerned with: survival, keeping the lights and doors open; navigating the complex business terrain and new technologies.

96% of SMEs in the US expects AI to handle repetitive research tasks as data cleaning within 5 years according to Qualtrics survey. Meanwhile, 63% of SMEs thinks AI will take over statistical analysis within the next decade. For example Leroy Merlin, a French home-improvement retailer, used to order new stocks on Fridays, defaulting to same items as the week before. Now it uses algorithms provided by AI start-up Vekia, to read past sales data plus other information affecting sales, including weather forecasts, to stick shelves more effectively.

SME are of course involved in supply chains and AI has a big presence in them. Firms are likely to derive between 1.3 trillion US dollars and 2 trillion US dollars in economic value from using AI in supply chains & manufacturing. AI can help in:

- managing finances and paying suppliers by scanning invoices and predicting payments;
- predicting equipment failure in advance useful above all for firms with large asset holdings to help avoid big costs of unexpected breakdowns;
- refrigeration: it uses AI to forecast in what order items will arrive and live a warehouse to organize pallets in the right position;
- improvements in inventory management and demand forecasting;
- tracking movement of goods.

As a matter of fact AI makes human more efficient and also impacts on customer-service. The share of customer service interactions worldwide handled by Artificial Intelligence rose fivefold to 15% and is expected to rise to 40% by 2019. AI in this framework:

- enhances customer-service agents' knowledge, performance and speed;
- gives rise to virtual agents;

- frees customer-service agents from routine tasks for new tasks and generates new revenue.

In addition, prof. Mitra pointed out that there will be a likely decline in phone-based customer services by 10% by 2019. For example instead of multiple forms for insurance claims, customers take photos of damage (car) and submit them via an app for a quick quote of repairs. Services like this make customers' lives easier and generate more custom who will provide more training data to make AI system smarter.

Prof. Mitra then presented some challenges and problems related to AI:

- the biggest role is about payroll and staff count. McKinsey suggests that by 2030 up to 375 million people or 14% of global workforce could have jobs automated away.
- protecting privacy as AI spreads.
- possible problems with competition if there is one major players making a breakthrough in developing technologies.
- rise of monopolies in industries outside the tech sector stifling innovation.

Prof. Mitra then referred to jobs, and specifically in which sectors AI will have the most impact: office and administrative, manufacturing and production, construction and extraction are the sectors which will have the majority of job losses.

Prof. Mitra concluded the session by stating that SMEs really have to embrace the technology ecosystem whether or not they are technology-based SMEs themselves. All innovation stakeholders need to be aware of the fact that we are moving from a complicated to a complex business situation in which different parts of the ecosystem, of machineries and of the retail system etc. interact independently making prediction of and controlling outcome almost impossible.