How AI helps in managing businesses better

Adopting AI in businesses leads to substantial efficiency gains, writes **Debashis Guha**

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The use of Artificial Intelligence (AI) in business evolves through four stages. The first is where only elementary processes are automated using AI tools, the next is rule-based administration of work, followed by knowledge integration and finally to AI-based formulation and creation of strategy.

Basic yet significant

The first phase of AI adoption occurs at the semiotic layer of an organisation, where primitive operations, such as document preparation and retrieval in back offices, etc, are automated and carried out by AI. These are simple AI systems that optimise basic operations of an enterprise, but they can lead to significant improvements on efficiency.

Different from classical systems

The second phase is the syntactic layer that deploys rules-based systems to carry out administrative tasks. Some of these are legacy operations research systems that have been used for decades to optimise scheduling, while others are more recent models that use machine learning to run advertising campaigns, financial trading, and so on. A lot of research and development in the current era operates at this level, using rules based on machine learning from data.

When people talk about data-driven analytics or AI-based decision making, these syntactic layer systems are what they have in mind. These models may be rules-based, but they are different from classical expert systems, since the rules used for administering the business are learnt from large-scale data.

Integrate knowledge

The third phase, currently still in a nascent stage, is the semantic layer, in which management uses AI-based tools or automated platforms to collect and store the knowledge contained in an organisational network. This is an essential task, since the reification of work in a large-scale enterprise requires management to integrate organisational knowledge, and to reconstruct and restore meaning to work, without which the workers would be unable to complete their tasks successfully.

This is especially true for knowledge workers who may work from home or in other remote locations. Tools in this area are usually based on deep learning and use methods that extract network structure and contextual meaning from large-scale visual, textual, and multimedia databases.

Formulating strategies

The final and most advanced form of AI adoption is the structural layer that can be used to formulate business strategies. Most advancements in this area are still preliminary and emphasis so far has been on development of theoretical tools. Two essential tools used are large-scale data-based scenario analysis and game theoretic analysis using adversarial models.

Each of the four adoption layers results in substantial efficiency gains. The more complex the layer, higher is the gain. Until now, we have mostly seen benefits from the first two adoption layers that affect day-to-day basic operations and their administration. Soon, semantic AI tools will become ubiquitous, while knowledge integration and meaning construction across an enterprise will be enabled, which will lead to bigger efficiency gains. Finally, in the distant future, structural AI tools will boost efficiency and also the creativity of an enterprise.

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