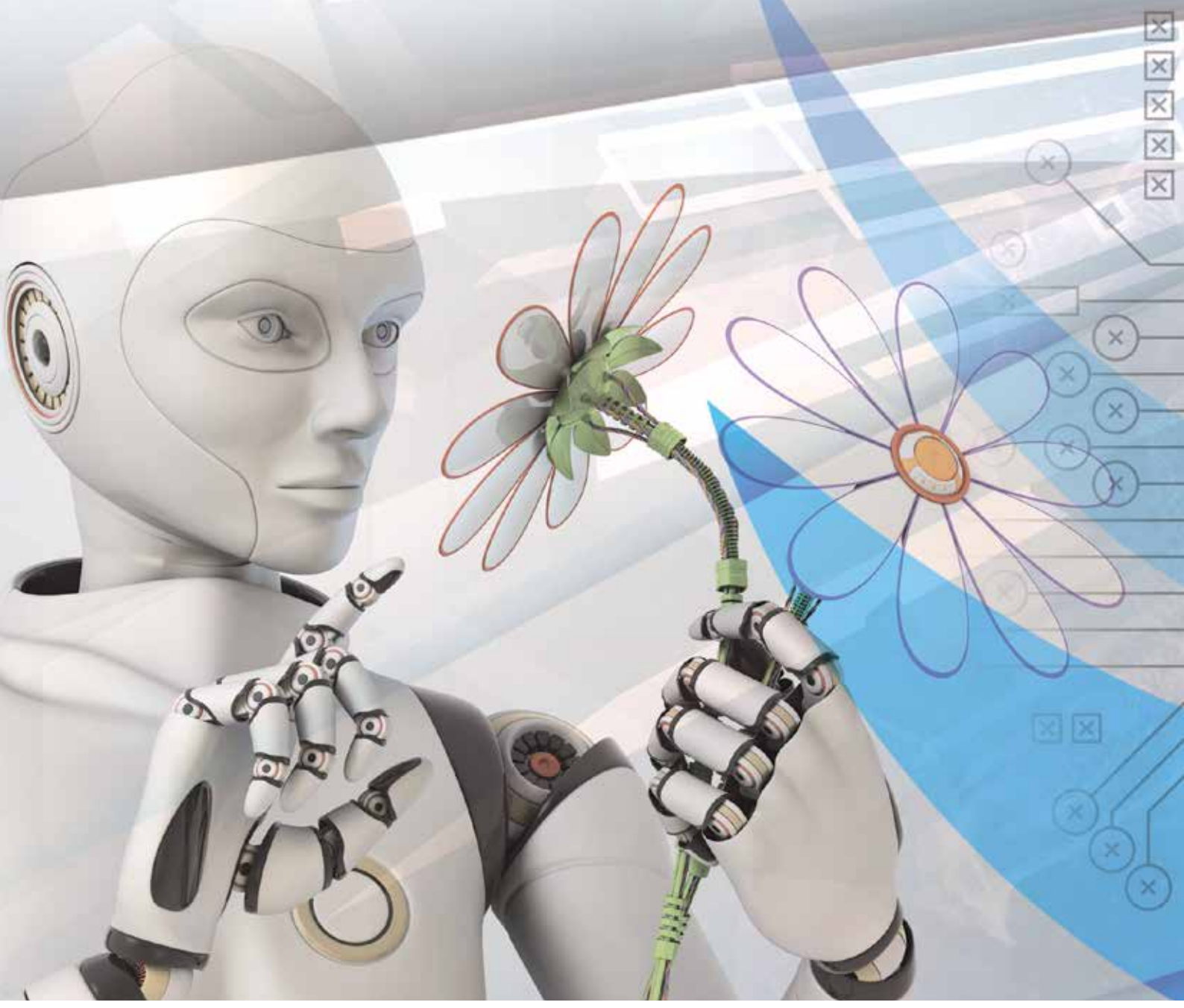

AI and the organisation

AI need not be looked upon as a replacement for human intelligence, but one of the ways to supplement it.

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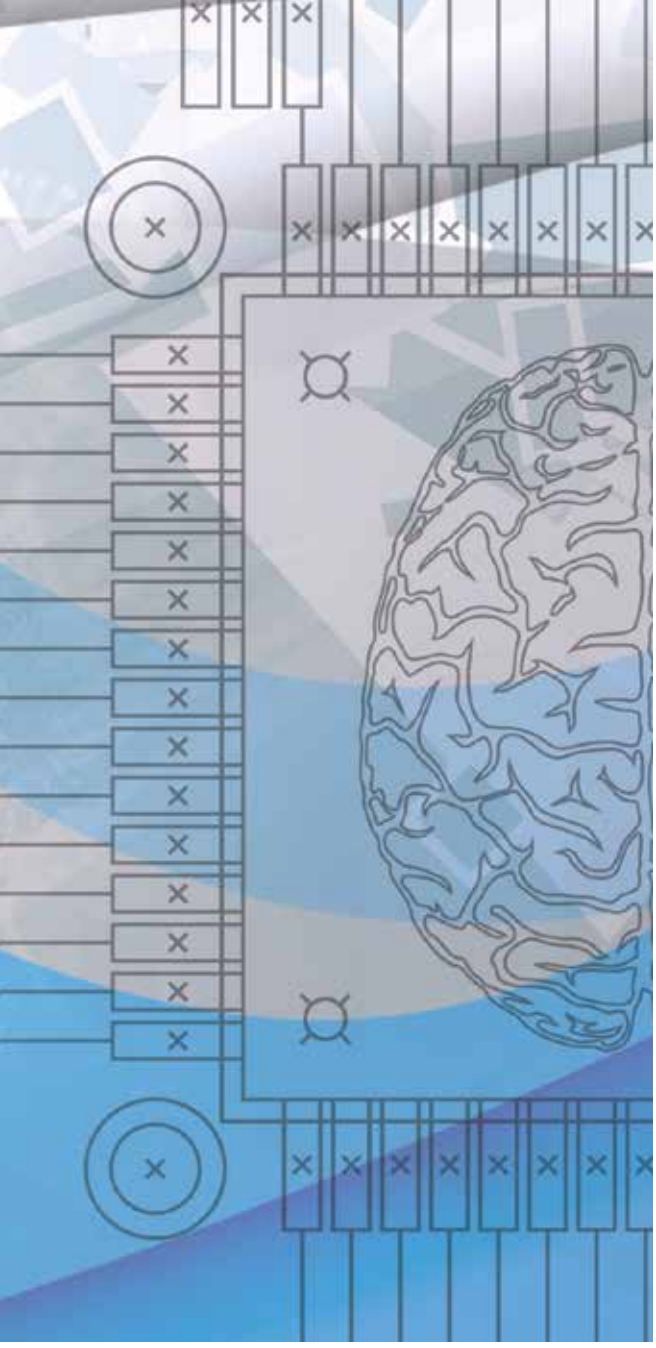


COVER STORY

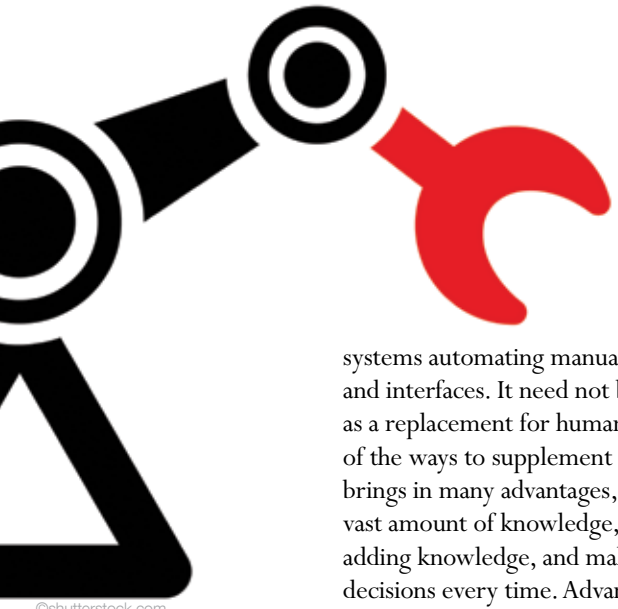
Information Technology (IT) has made a dramatic impact on many fronts, automating almost all manual business processes. Over many decades, the focus was on making all manual systems automated, inclusive, accessible to every stakeholder, and providing end-to-end, seamless, and efficient solutions. Almost every organisation invested in technology, and automation created huge amounts of data in various forms—about customers, products, services, suppliers, transactions, interactions, and so on. And heads of firms were contemplating what to do with it.

IT vendors came up with BI (business intelligence) and BA (business analytics) tools and technologies to help organisations leverage their IT investments. But despite BI/BA advancing to a great extent, there are still gaps when it comes to reaping the most benefit out of IT investments—it is this gap that Artificial Intelligence (AI) and other technologies promise to fill.

Machine learning includes AI techniques and it has successfully been used in knowledge automation too. The obvious things AI can do are to value add and automate BI/BA. Existing BI/BA can also help improve as well as add to AI capabilities.

When it comes to BI/BA, people by this time understand well what it is, what it does, and where it has been applied. But there are preconceived notions about AI. Some people expect it to do wonders—always comparing it with human intelligence or, look at it as being capable of having its own evolved intelligence. Many times when people talk about AI, they talk about NLP (natural language processing) or machines able to answer any question about anything intelligently. There are plenty of jobs people do—each one requires specific skill sets, relevant domain knowledge and experiences, and do not really need the world's entire knowledge; also, it need not always be expressed in natural languages. Hence anyone who does not have high expectations, but believes that it can help solve specific, routine knowledge tasks intelligently can take advantage of AI.

Not every human on this planet is intelligent and smart. Good upbringing, good education, and good work experience add a lot to shaping up of an individual's intelligence. And all jobs do not need a high level of intelligence; most of them could be routine jobs. Also, intelligence possessed by individuals and its use is subject to many factors. What does AI try to do? It tries to mimic or embody the intelligence of human beings (and in some cases of other species) through machines or software. Hence, if a job to be automated is modelled correctly, and the machine is fed with the right knowledge and trained properly, it will be able to do routine knowledge jobs typically done by humans effectively and efficiently—the way industrial robots do physical jobs or operational



systems automating manual processes, workflow, and interfaces. It need not be always looked upon as a replacement for human intelligence, but one of the ways to supplement it. Such intelligence brings in many advantages, works 24/7, holds vast amount of knowledge, retains and goes on adding knowledge, and makes consistent and quick decisions every time. Advancement in wireless, sensor, mobile, portable devices, embedded chips, and IoT technologies is making more structured information available to AI systems. Even machines will be able to understand, remember, recognise, and talk to each other!

All levels and types of intelligence capabilities are required in an organisation right from the operational to the strategic level, and they need not be focussed on customer-centric tasks; they can be involved in all processes, workflows, and interfaces. For instance, intelligence can be incorporated into the inventory management system to decide what to reorder, when to reorder, which supplier(s) to order from, without waiting for manual instructions from human decision-makers. Knowledge about suppliers makes it easy to send an order to the right person at the right time, based on parameters such as urgency, quality and location of delivery, profitability, supplier capacities, capabilities, costs, skills, and distance. Other examples include using resources optimally such as: (a) printing and sending hard copies of HR circulars to only relevant employees, (b) booking appropriate office room for meetings/functions based on the number and kind of people attending, (c) using the right type of vehicle, based on the number of people travelling together, (d) sharing resources like vehicle whenever possible, and (e) connecting the right help-desk person to the customer, based on the nature of complaint.

Interfaces refer to interactive channels and customer touchpoints like IVRs, SMS, kiosks, ATMs, OBDs, apps, and data entry terminals. Intelligent interfaces can be self-serviced, be intuitive and adaptive, and save a lot of time (of customers and organisations) if they are capable of understanding the customer based on his or her demographics, past interactions and experiences. Imagine an intelligent OBD that nudges a person for the right campaign or product at the right time. Or when a computer vendor's IVR receives a call from a customer, it connects him or her to the right support person based on what computer was purchased recently, and the kind of problems those who have bought similar computers faced.

Conventional analytics is mostly data driven by maths and statistics and really do not use human expertise, domain model, and context (semantics). The insights are delivered using reports, dashboards, and spreadsheets, and decisions taken by people and not really automated and integrated into operational systems. Imagine driving a car constantly looking at the car's dashboard and deciding appropriate action. Interpretation of those dashboard indicators and corresponding action are completely in the hands of the driver.

There are many factors on which interpretation of indicators and the corresponding action taken by the driver depends on—experience of driving that type of a car, awareness about stipulated safety guidelines, technical knowledge, and understanding of local geography, climate, road conditions, and utilities such as petrol pumps. There are other personal factors as well—temperament, mood, and so on. Also, if the driver does not act in real time or within a specific time frame, it could invite disaster. In an organisation, there are many such drivers dealing with different types of dashboards, logs, and reports. And not everyone is a smart driver and has a pleasant temperament and mood always.

Can a car have its own brain, continuously analyse signals and data sent by various sensors fitted in and around, know the geo-location, decide what to do or what is required to do based on current context, fed by knowledge gathered from previous experiences? Imagine a situation: a car is about to pass a petrol station—the brain gets a related trigger to check fuel availability, realises it has fuel left for only next 5 km, and that the next petrol station is 10 km away. And just refuses (or tells the driver it is time to fill the tank!) to go past the petrol station by reducing speed and shutting the engine. The same brain understands

The automation and complexity of implementing enterprise-level AI can depend on various factors.

the car owner too. It could tell him or remind him about a restaurant of his choice on the way to have lunch.

Data-driven analytics and insights can be a source of knowledge for AI systems. There are many challenges in data-driven analytics—to pre-process and clean data, or select the right technique such as which regression analysis technique to use for the problem in hand based on the availability of data and its characteristics. AI can automate challenges to a certain extent.

In conventional analytics, analysts deal with aggregated data in applications like OLAP (Online Analytical Processing) for drill-down analysis; do analysis only at item level (rather than going into deeper dimensions) in applications such as using item-to-item filtering and market basket analysis or association mining; and focus on getting broader insights (patterns, segments and groups) and these insights are then applied to the entire group or segment. Aggregating data or grouping it based on various dimensions completely destroys the significance of analysing and understanding one entity at a time—such as a customer, a supplier, a product, or an employee at a deeper level. Item-level analysis will never be able to find out the specific colour choice of a customer if most of the items he or she had bought has a specific type of colour; for example, variants of blue. But based on unique personalised experiences, even a small-retail shop sales person knows individuals and understands their tastes and needs. They can tell a customer, "Sir/Madam, this is a new thing that has just arrived in the store" and "you would like it" based on what the customer preferred, bought and liked in the past. Broader insights can help to address cold-start issues such as customer visiting the store first time.

AI, analytics, and other technologies put together surely add, integrate, and operationalise intelligence everywhere in an organisation, making it a smart entity like Google Car. However, organisations have to be geared towards this. The automation and complexity of implementing enterprise-level AI can depend on various factors. Some of them are:

- Level of automation and extent of using state-of-the-art technologies. More automation ensures availability of data, information, and knowledge in real-time.
- Unification, granularity, and standardisation (common vocabulary with proper syntax and semantics) across the organisation in collecting, sharing, representing, storing and disseminating data, gathering knowledge about customers, products, services, resources, employees, and so on.
- Strong feedback mechanism to understand issues and reuse past experiences effectively in the present situation.
- Culture and organisational processes for creating, sharing, and disseminating knowledge in structured forms or the forms that machines can understand.
- Ability to recognise, capture, and integrate as much information as possible from various touchpoints, internal and external sources.
- Skills availability to understand a variety of analytics and AI technologies.
- Integration with the outside world (such as web 2.0 sources) and adoption to widely accepted standards and technologies.
- Capability to use, and integration of appropriate methodologies, techniques, tools, and technologies to build intelligence capabilities. IM

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