TATA CONSULTANCY SERVICES

Building on belief

Collaborative intelligence to demystify unknowns

Abstract

Artificial intelligence (AI) technology is witnessing unprecedented growth both in its technological advancement and adoption across all fields. AI has established itself as a unique technology to augment humans and not replace them.

Be it to compete and differentiate or to demonstrate resilience and adaptability, the enterprise needs to develop a deep understanding of its strengths, weaknesses, opportunities and threats in its current ecosystem. Moreover, to manage stakeholder expectations around business excellence, it is necessary to understand, with certainty, the correlation of enterprise performance, ecosystem support and risk prediction. This is essentially about the decision making which is based on intelligence. This intelligence has three tenets. First is coordinated intelligence, where humans assist humans; the second is connected intelligence, where machines assist machines; and the third is collaborative intelligence, where humans assist machines and vice versa. The latter two also have a linkage to digital intelligence.

Collaborative intelligence has taken center stage in today's AI-dominated world, and its realization is enabled by AI supporting the demystification of the Known x Unknown matrix.

Known x Unknown matrix

The intelligence, be it coordinated, connected or collaborative, leads to sound decision making, be it deterministic or probabilistic. This affects the ability of an enterprise to manage the Known x Unknown matrix related to its business.

The Known x Unknown matrix can be represented in terms of situation and response, as follows.

Situation	Response
Known	Known
Known	Unknown
Unknown	Known
Unknown	Unknown

1.1. Known-Known

An enterprise (business organization) in a long-lasting, sustainable business typically manages the Known-Known matrix very well. The required minimum operational environment details of the business are typically known (situation), and basis that action (response) to manage a specific situation is well established and proven. These are typically deterministic decisions, wherein it is the case of one-to-one mapping: for a specific situation, the right response is known.

For example, the typical business intelligence application enabling enterprise performance management. These business scenarios can be very well managed by coordinated intelligence and connected intelligence.

1.2. Known-Unknown

No enterprise ever wants to just survive, but they also are constantly looking to achieve growth, transformation, resilience, and adaptability. An enterprise cannot compete and create a compelling value proposition unless it focuses on unknowns (basically, the Known-Unknown, Unknown-Known, and Unknown-Unknown scenarios).

Moving from the world of known to the realm of unknown is a multidimensional journey, wherein the extents of unknowns today, while they cannot be eliminated, get significantly reduced as they become knowns of tomorrow.

Treading on the path of changing unknown to known necessitates organizations to go beyond their enterprise and develop a deep awareness of the ecosystem it is functioning in. The organization also needs to consider various influencing factors linked to its vendors, partners, institutes (financial, education, standard bodies), investors, regulators, government and competitors.

To gainfully manage these unknowns in the business, collaborative intelligence - where AI plays the pivotal role - is needed.

1.2.1. Known-Unknown

With a focus on the ecosystem, an enterprise slowly becomes proficient in managing Known-Unknown. Here the enterprise knows the situation it needs to handle but is unclear on how to respond. It is a one-to-many kind of situation as for a situation, there could be multiple responses, and the most appropriate response is unknown. For example, in an enterprise, the risk is known, but the extent of the risk, its magnitude and impact, is unknown.

1.2.2. Unknown-Known

Here too, with the focus on ecosystem, the enterprise gets an understanding of Unknown-Known, that is, for an enterprise, key influencing factors impacting its business are unknown. However, there may be other existing sources that are known and can help manage those situations. These sources could be ecosystem entities (vendors, partners, institutes -financial, education, standard bodies, investors, regulators, government, and competitors), crowdsourcing, and open data, and could demystify unknowns for an enterprise.

For example, an enterprise wants to launch a new product/service, where it wants to expand its customer base. It only has risk profiles of its existing customers (known) but not of the prospects (unknown). This information can be can be availed of from its partners.

1.2.3. Unknown-Unknown

Today, we are in an age of abundance, with an abundance of capital, capabilities, talent and data, and an abundance of Unknown-Unknowns. The Unknown-Unknowns is a completely gray area, but it can get worked upon incrementally by creating a hypothesis. Typically, this hypothesis gets tested on smaller datasets, and basis the outcome obtained, it gets extrapolated to more extensive data and moved either into the bucket of Known-Unknown or Unknown-Known and managed via techniques specific to the bucket.

An example of an Unknown-Unknown scenario is how to exponentially increase the scale of customer acquisition and retention in a dynamic digital marketplace.

Collaborative Intelligence

Collaborative intelligence is where humans assist machines and machines assist humans.

Humans assisting machines

This can be understood from the perspective of L-T.

- **Learning:** Here, humans enable AI solutions by training them and tweaking them so that these AI solutions continue to demystify the unknowns.
- **Logging:** For its acceptability, the AI solutions must be explainable, and thus humans have to ensure that the execution of these AI solutions is traced and tracked.
- **Lasting:** As AI is here to stay and will continue to increase its footprint in all the fields, it is essential that while building and deploying the AI solutions, humans focus on ensuring that the output of these AI solutions is truthful and can be trusted.

Machines assisting humans

This can be understood from the perspective of I-R.

- **Intensify:** As unknowns become knowns in the business operations, it is the machines that ensure that those operations become **repeatable and robust,** thereby intensifying the business operations.
- **Interact:** Machines are now performing several jobs earlier performed by humans, thereby allowing humans to re-profile themselves and focus on more value-adding jobs. In addition, it is the machines that are currently displaying **responsive and rational** behavior as humans to interact in a more human-like manner.
- **Instill:** When performing the jobs earlier performed by humans, the machines must necessarily instill in them **rightness and rigor** so that they continue to do what they are expected to do.

How businesses can leverage collaborative intelligence

As the enterprises demystify the Unknown-Unknowns, they typically revisit their business processes, which leads to the following impact.

- **Business process enhancements:** This is an incremental innovation in the business processes, wherein an enterprise improves its operational KPIs by having more efficient business operations.
- **Business process re-engineering:** This is a radical innovation in the business processes, wherein an enterprise significantly enhances its business KPIs, thereby becoming more competitive.
- **Business process re-imagination:** This is a disruptive innovation in the business processes, wherein an enterprise launches a game-changing product/service to differentiate its business offerings.

Conclusion

Addressing the Known-Unknown matrix with AI-enabled collaborative intelligence leads enterprises to gain higher quantitative and qualitative insights about their ecosystem, enabling them to continuously tread on the journey of demystifying Known x Unknown. This will further motivate enterprises, predominantly humans, in “doing right things” rather than “doing things right” and help achieve the much-needed accelerated business outcomes, thereby reconfirming that AI is there to augment humans and not replace them.

About the author

Mahesh Kshirsagar
CTO – Analytics & Insights, TCS

Mahesh is responsible for shaping innovative and purpose-led solutions that accelerate the growth and transformation agenda of enterprises. Mahesh is an engineering graduate, who started his career in TCS in 1990, and has IT expertise of 30+ years spanning technology domains, industry verticals and software processes. Over the years, he has incubated several high-impact, business-aligned IT solutions/services having high revenue potential, focusing on thought leadership and innovation to enable growth and transformation. His IT expertise stems from his employment experience in system integrator companies, end-user organizations, IT products, and BPO organizations.

Conceptualizing, architecting, and delivering state-of-the-art business IT solutions is his strength. He has applied for more than 30 patents for his solutions, of which around 10 have been granted. His solutions have also won several prestigious industry awards.

Contact

Visit the Analytics & Insights Unit page on https://www.tcs.com

Email: BusinessAndTechnologyServices.Marketing@TCS.COM

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