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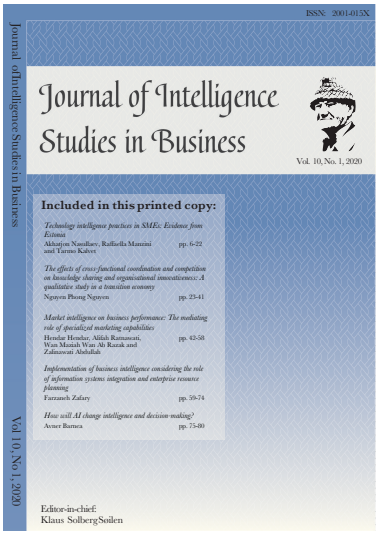

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How will AI change intelligence and decision-making?

Avner Barnea[a]*

[a]School of Business, Netanya Academic College, National Security Studies Center, University of Haifa, Israel
*avnerpro@netvision.net.il

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How will AI change intelligence and decision-making?

Avner Barnea[a]*

[a]*School of Business, Netanya Academic College, National Security Studies Center, University of Haifa, Israel*

**Corresponding author:* avnerpro@netvision.net.il

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ABSTRACT The world is facing a rapid pace of changes with a heightened sense of uncertainty, ambiguity, and complexity in both government and business landscapes. New threats and major changes in the world order are creating an external environment that demands closer monitoring and greater anticipatory and predictive skills. Deeper analysis and speed of action are becoming more important for agile organizations and governments. The needs to upgrade the capabilities of intelligence analysts, mostly in strategic intelligence, have been known for quite a long time. Scholars who are looking into intelligence failures[1] and other major national security[2] and business[3] events when decision-makers were not warned in time, seek expert tools and methodologies to avoid these failures[4]. Management is constantly concerned, aspiring to receive better decisions by relying on solid analysis in order to better understand the challenges ahead[5]. The current direction is in the same direction, while new emerging technologies enable theory and practice to move forward. Artificial intelligence (AI) capabilities definitely are jumping two stairs up. It looks that through new AI tools, the value of humans will not become redundant but rather improve its outcomes by relying on better intelligence for their decisions.

KEYWORDS Artificial intelligence (AI), competition, competitive advantage, decision-making, intelligence failures, prediction, strategic surprises

1. INTRODUCTION

Many corporations are allocating significant resources to gathering and analyzing massive amounts of information about their rivals and disruptive phenomena in business. Nevertheless, too often these companies face strategic surprises, usually when their competitors make moves that were not anticipated. Such surprises frequently force corporate senior management to react under intense pressures, often leading to poorly informed, hurried and sub-optimal decisions[6]. It happens similarly in governments' decisions on national security in events of military surprises or other national threats like the recent COVID-19 pandemic.

Numerous inquiry commissions in Western democracies[7] have pointed towards the phenomenon of governments' looking to make

[1] Bar-Joseph, U. and McDermott, R. Intelligence Success & Failure, The Human Factor. Oxford University Press. 2017.
[2] Marrin, S. "Evaluating CIA's Analytical Performance: Reflections of a Former Analyst", *Orbis*, 326 (2013).
[3] Gilad, B. *Early Warning*, NY Amacom, 2004.
[4] Betts, R. K. "Two faces of intelligence failure: September 11 and Iraq's missing WMD." *Political Science Quarterly*, 122, 4 (2007): 585-606.
[5] Bisson, C., and Barnea, A. "Competitive Intelligence: From being the "eyes and the ears" to becoming "the brain" of companies", *Competitive Intelligence Magazine*, Vol 23, no. 4, Fall, 2018.
[6] Barnea, A. "Failures in National and Business Intelligence: A Comparative Study", A Thesis Submitted for the Degree "Doctor of Philosophy", University of Haifa, Faculty of Social Sciences, School of Political Sciences (2015).
[7] Betts, R. "Analysis, War and Decision: Why intelligence failures are inevitable", *Studies in Intelligence, Journal of the American Intelligence Professional* (2014).

improvements on intelligence failures. Different programs have been established to address this challenge, mainly by actions such as further training of analysts, team building efforts, diversity of analysts, and using expert tools. There is also a need to train decision makers on how to collaborate with intelligence and strategic units for better intelligence outputs. It looks as if using AI can help to make a change[8].

In this paper, there will be an attempt to predict the new direction of AI in influencing decision-making, and mostly on the prospects for it to lead to better analytical capabilities, which can have an immediate impact on the quality of management judgment.

2. ABOUT AI

According to a PwC report[9], it is widely accepted that AI technologies will be the most disruptive phenomenon over the next decade. Growing interest in AI is reflected in the PwC Global CEO Survey, which found that 85% of CEOs agreeing that AI will significantly change the way they do business in the next five years, even if AI's penetration into the senior echelon of companies is not yet impressive. One definition of AI is that it is "a collective term for computer systems that can sense their environment, think, learn, and take action in response to what they are sensing and their objectives."[10] Another definition is that AI "…is Intelligence displayed by machines, in contrast with the natural intelligence (NI) displayed by humans and other animals."[11] According to McKinsey, "AI is typically defined as the ability of a machine to perform cognitive functions we associate with human minds, such as perceiving, reasoning, learning, and problem solving".[12]

There are already new tools in use that offer an AI-enabled solution that tracks over 200,000 online sources on competitors, customers, and industry segments. It enables users to collect, curate, and share information across the organization.

These capabilities make AI a powerful tool, which can radicalize decision making and completely change the way we do business. The same may happen to decision making in national security issues, that are also in need of better analysis capabilities to be shared with the decision makers.

3. THE MANNER OF DECISION MAKING

However, it looks like actually there is no change, and no further significant progress has been made so far in the analysis of information to become intelligence. Intelligence manuals and a few good books[13] on intelligence analysis are not helping to change the course while do not embed AI into the process of absorbing information to become useful intelligence. The best information obtained is not the key to the best analysis and to be able to create significant insights. Always there will be a gap between the need to know and the information in hand, so the assessments remains the core of the problem. It is a mistake to put all the responsibility for failures of analysis on the analysts' shoulders[14]. It is time to consider that the quality of analysis will become a shared responsibility of the senior managements both in business and in government. For example, regarding one of the well-known failures of intelligence analysis was that the Israeli intelligence did not correctly assess Egypt's intentions before the Yom Kippur War (1973). There are scholars[15] who call for the responsibility of the heads of the Israeli state who could have assessed the situation differently based on the information they had and not solely on the heads of the military intelligence.

Since the recent progress of AI, it looks as if new opportunities are coming up. Using the latest capabilities of AI seemed to be an outstanding opportunity to upgrade the quality of analysts' reports and thus to better support the decision-makers.

AI capabilities that can provide intelligent learning algorithms, analyze data, draw some conclusions and even recommend the best solutions are already part of our reality.

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[8] Colson, E. "What AI-Driven Decision Making Looks Like", *Harvard Business Review*, July 08, 2019

[9] PwC, "Artificial intelligence may be a game changer for pricing", 2019

[10] Ibid.

[11] Russell, Stuart J.; Norvig, Peter (2003), *Artificial Intelligence: A Modern Approach* (2nd ed.), Upper Saddle River, New Jersey: Prentice Hall, p. 4.

[12] Chui, Michael and McCarthy Brian, "An Executive Guide to AI", *McKinsey*, October, 2018.

[13] Pherson, K. and Pherson, R. *Critical Thinking for Strategic Intelligence*, CQ Press, 2017.

[14] Bar-Joseph, U. & Kruglanski, A. (2003). "Intelligence Failures and the need for cognitive Closure: On the Psychology of the Yom Kippur Surprise", *Political Psychology* 24: pp. 75-99.

[15] Shalev, A. *Israel's Intelligence Assessment before the Yom Kippur War: disentangling deception and distraction*, Sussex Academic Press, Australia (2010).

Another goal is to provide predictions based on incomplete information. For instance, predictive analytics can be used to map a complex decision tree of all possible outcomes, which will then simplify human decision-making. AI can already perform tasks such as identifying patterns in the data more efficiently than humans, enabling businesses to gain more insight out of their data.

Intelligence agencies in the US, UK and Israel have already started to look carefully into these new AI opportunities. However, officials say they will not lose sight of the importance of the human analyst. "As we're looking at algorithmic analysis, artificial intelligence, machine learning, we're finding [that] we're having to examine what the role [is] of the human and the analyst," Melissa Drisko, the Defense Intelligence Agency's deputy director added: "It's kind of scary … but what's the role, what do we look like in 10 years … and even as we try to define it does that make [the role of the analyst] obsolete."[16]

Dawn Meyerriecks, the CIA's deputy director for science and technology, says regarding the use of AI: "What do I need in order to make a really good assessment on the back-end because that tells me what sort of collection I need to raise confidence to go address national leadership?"[17] She added that: "The CIA currently has 137 pilot projects directly related to artificial intelligence".

What are the expectations of these intelligence organizations in the coming age of AI? In April 2020, there were 40 AI start-ups in Israel, with a few focused on information for decision making[18]. As can be seen from this list, a few Israeli start-ups will develop the use of AI in the intelligence analysis, both for business and government, based on the information gathered. It can give a strong support to predict future moves by competitors and enemies, and significantly improve analysis of information if the outputs produce better intelligence reports presented to the decision-makers.

Senior executives desperately need new tools to help them systematically analyze their own and other players' competitive positions in hypercompetitive markets as well as in global changes in the aspects of security and threats. Often, they need a fast, yet reliable, way of capturing changes that were emerging in the market so they could finalize a strategy quickly.

It is already possible to foresee a circumstance when decision makers are more beneficial with the help of the new AI capabilities entering the markets, becoming valuable. This can be a real breakthrough.

4. HOW MUCH WILL THE DECISION MAKERS BENEFIT?

The buzz around AI has grown loud enough to penetrate the C-suites of organizations around the world, and for a good reason. Investments in AI tools are growing and are increasingly coming also from organizations outside the tech space[19]. However, so far, very few senior executives think practically about how AI will impact their decision-making performance.

It's hard to say how much of a leader's success comes from know-how and how much comes from a combination of expectations, accumulated experience, and access to information and tools that aren't readily available to subordinates.

It looks as if AI will become a supplement and enhance human thinking and help to avoid human cognitive biases. If this is the direction, we must start discussing its possible effects on how companies and other organizations such as governments operate and, just as importantly, on how they're run. When high-quality information and tools for decision-making will be accessed at every level within the business and in government, top executives will be under increasing pressure to use AI solutions to deliver extraordinary value.

It is already visible that CEOs will leverage the ability of AI to turn massive amounts of information into answers to complex strategic questions. AI will let them ask questions that they didn't even know to ask. As other top executives also turn to AI to inform their input into corporate strategy, the effect will be amplified across the entire senior executives' teams.

It appears as if CEOs will need to combine strong strategic thinking skills with increasingly sophisticated analytic tools to help them run the organization. They will have to learn carefully, first what the right questions are. Senior executives who use instinctive leadership skills or past successes to make decisions, will have to become evidence

[16] Goldstein, P. "Why Intelligence Agencies Are So Interested in AI?" *Fedtech Magazine*, Oct. 13(2017),

[17] Tucker, p. "What the CIA'S Tech Director Wants from AI", *Defense One*, September 6, (2017),

[18] "Top 40 AI startups in Israel", April 2020

[19] Bughin, J., Chui, M. and McCarthey, B. (2017). "How to make AI work for your business", *Harvard Business Review*, August.

enthusiasts, as AI tools will influence strategic thinking to emphasize inquiry over gut thinking. This can be a major change in their set of activities and routines, and they will have to be informed about the capabilities of AI in order to use them effectively.

Still, AI is a long way from even approximating the human ability to solve problems that aren't well defined. One can't simply inquire of an AI platform: "What is the next move of my key competitor?", "Predict decisions of my strategic customer", or alternatively, "What is the decision DNA of my competitor's management?" CEOs or their close assistants especially in strategy and intelligence must teach the algorithm all the criteria to use to define performance, capabilities and intentions of competitors such as M&As decisions, new-product introductions, and entering into new disruptive technologies. The same goes for customers. Once it knows what it's looking for, though, AI is excellent at identifying patterns in masses of data and using those patterns to build the kinds of complex insights humans can use to inform their decisions.

Companies invest significant resource in business intelligence and other data gathering systems.

However, without identifying the "cognitive algebra" of how these competitors make decisions on M&As, tenders, new technologies, and new product introductions, data and information alone almost always lead to errors in decisions and predictions. "Cognitive algebra" considers some of the interrelations between attribution theory and theory of information integration. Both integration theory and attribution theory have been concerned with personal perception, but there has been little interaction between them. [20]

This has had huge financial consequences for companies. By doing "reverse engineering" of a series of decisions by your competitor or rival in a particular area (for example, marketing, sales, M&As, tenders) it is possible to identify the decision rule of each decision. Analyzing these rules supports the process of identifying a dominant pattern of the decision of your competitor. The outcome can provide the improvement of understanding of how your competitor/rival not only makes decisions, but the way it arrives to a choice.

Most senior management decisions aren't one-offs: they recur over time. And as they do, AI will compile a vast amount of past data that will inform decisions about critical issues in business, like competitive intelligence, strategic planning, finance and supply chain optimization and also in governmental intelligence. For example, today's heads of marketing are waiting weeks or months for the marketing department to field and analyze a customer survey before accurately learning about the success of a new product. With AI constantly monitoring inputs such as purchase data, search traffic, and social media, CMOs will be able to track and respond to customer sentiment in real time. This is a major competitive advantage.

It can similarly work promptly in government and especially in intelligence agencies, especially when they are looking into strategic issues. AI will also be highly practical when the need is for timely and relevant data analysis. Many intelligence organizations struggle with long lead times for analyzing data as demands for fast decisions increase or conducting analysis based on partial information as a result of needs to supply quick responses. AI is also capable of giving key factors indicators that place that metric into different contexts so management and analysts can see what is happening, what might happen and what has happened? Then it is possible to act on those intelligence vectors.

AI may be used to help anticipate what will happen in the future and thus help decision makers to shape the company's actions accordingly.

Companies will need to identify and provide AI with all the relevant variables, as well as guidance on how to prioritize and rank those variables to determine which option is best. Otherwise, it risks results that tell the company its best choice is to do what it has always done and get the same outcome it has always had. It's not always possible to know whether a question that can be addressed by AI is worth asking. As AI becomes more available and sophisticated, though, these inquiries will become possible in many more cases. CEOs and senior managements in business and in government will be able to ask more questions that were once too complex to answer and to determine questions that might not previously have been answerable in the "old" world.

[20] Anderson, N. (1974). "Cognitive Algebra: Integration Theory Applied to Social Attribution", *Advances in Experimental Social Psychology* 26:1-101.

Once we understand the "cognitive algebra" of our competitors' and rivals' decisions, it will be able to better predict, using AI algorithms, their next move or decision. This gives a tremendous advantage in a competitive environment. These AI products are designed for top executives to de-bias their important decisions, by giving them objective understanding of their key competitors and rivals. It is quite similar to the use of newly non-invasive technologies in medicine, enabling doctors to treat patients successfully without using surgical systems. When senior management has improved tools, they will have to learn how to better use them. This will be different than what they are used to with the frequent use of AI tools.

Most large corporations have functional units (strategic planning, competitive intelligence) that monitor the external environment, including capturing intentions and actions of their competitors. Most of these companies, even Fortune 500s, use simple tools, primarily designed to gather information. Such tools analyze competitive information, primarily from open source intelligence (OSINT) and from internal information (through internal strong IT tools, known as business intelligence), but the resulting analysis and the added value are quite limited. There is an urgent need to find the next layer that will enable companies to generate insights tailored for strategic forecasting by utilizing technology that was specifically designed to analyze available competitive information. Such insights are invaluable assets for senior managers who are facing vital decisions regarding the strategic direction of their companies or of their governments.

AI that uses past data to make recommendations about possible alternatives will let top managers and others on lower levels test many different scenarios and determine how best to adapt business processes to manage risk across functions for any or all of those potential outcomes. It is hard to say yet what the precise added value of AI at the executive level will be. Until it is implemented, we won't know what new patterns it will uncover in existing data or how those patterns might lead to improved data analysis and thereby decisions. It looks as if in quantity issues like productivity, greater efficiency, or cost savings, the contribution of AI will be easier to trace.

However, AI will likely influence almost any decision a decision maker can make. It won't just deliver more data and informed predictions about how new initiatives might influence the organization. It will let senior executives see how those AI capabilities might have a more positive impact. Far from simply being another layer of technology, AI tools will guide in a new era of leadership. Leaders and other decision-makers and also analysts working closely with them will need analytic skills rather than just accumulated knowledge. They'll need an ability to inspire rather than control and they will use AI-driven inputs to create a long-term vision and purpose for the organization rather than a short-term strategy. We'll start to see a move towards a trend of relying on AI capability where what matters most is not the individual responsible but what all senior executives can do with the information at their disposal, with the close support of their strategic and intelligence teams.

It is possible that in the near future, measuring the quality of AI tools, organizations using it will be measured as a capability which will identify if companies are effectively aligned and allow organizations to achieve their objectives. Maybe AI capability needs to be added to the key internal elements in the famous McKinsey 7-S model that analyzes a firm's organizational design by looking at seven key internal capabilities: strategy, structure, systems, shared values, style, staff and skills, in order to identify if they are effectively aligned and allow an organization to achieve its objectives. [21]

5. TO WHAT EXTENTS WILL AI MAKE A DIFFERENCE?

It is possible to assume that AI will be valuable to upgrade the quality of analysis. However, it is worth remembering Porter's[22] views that a robust strategy requires a tailored value chain—it's about the supply side as well, the unique configuration of activities that delivers value. Strategy links choices on the demand side with the rare choices about the value chain (the supply side). You can't have a competitive advantage without both. So, there are other difficulties with the capabilities of analysis

[21] McKinsey & Company, "Enduring Ideas: The 7-S Framework", March 2008,

[22] Margretta, J. (2011). *Understanding Michael Porter: The Essential Guide to Competition and Strategy*, Harvard Business Press.

either by analyst who delivers them to decision makers or while the latter are actively involved in the analysis process, especially in the AI era.

Another challenge is how to avoid overestimating strengths, as we are aware there is an inward-looking bias in many corporations. It is also similar with overestimation of strengths over enemies that often are later found to be wrong. Senior executives might perceive their customer service as a strong area. So that becomes the "strength" on which they attempt to build a strategy. But how you reach to such conclusions? What is the basis for them? A real strength for strategy purposes has to be something the company can do better than any of its rivals. And perceiving being "better" is because you are performing different activities than your key competitors perform, because you've chosen a different configuration than they have. All these are often based on cognitive biases rather than analysis.

These difficulties lead to the conclusion that in order to make the right decision, senior executives will need to analyze not only their competitors' moves and other alarming changes in the external environment, including their future goals, but also to look carefully into their own performance. Although Porter[23] gives priority to the following capabilities to know better what is the right direction: future goals, assumptions, current strategy (of your competitor) and (their) capabilities, this still is not sufficient. Clearly, although better intelligence, through AI, of a competitor's goals can identify disruptive trends and technologies to support the prediction about the likelihood, the competitor will change its strategy, so there is a still a critical need to develop AI capabilities inside the corporation systems as not to be mistaken by biases that give outputs on a company's own capabilities. This is related to a company's products, distribution, marketing, overall costs and other capabilities.

So, the other side of the equation is to be able perform an excellent estimation of the competitors' reactions to a company's move and be able to ensure that this will give a sustainable competitive advantage. Here we expect to use AI, based on data gathered from multiple sources and stored internally. Corporations are not there yet but are starting to develop these new capabilities. Using AI capabilities for analyzing both the external environment together with the internal area are expected to give great value.

6. CONCLUSIONS

It is quite difficult to expect senior executives to dive into the nature of AI tools. It will be more reasonable to assume that they are more concerned with how to decide better and what the added value of AI is, if any. Regarding the future of AI in Israel, both in corporations[24] and the security establishment[25], it looks that there are a lot of expectations but organizations are still unsure of how much it is relevant for better decision making. This is also my perspective, after discussing this issue with numerous Israeli directors in senior positions. For example, it is possible to see the advantage of AI in running and optimizing many scenarios regarding "go to market" decisions instead of just the typical handful of scenarios, usually leaving them unimpressed. Discussing applications of AI in retail, i.e. marketing and sales, was more promising, especially demonstrating marketing forecasting and expected customer behavior. Senior executives who realized the potential of AI may be starting points for implementing it systematically. In the future, AI will be highly significant for analysis and predictions in advance of competitors' moves and in delivering early warning signals of threats in national intelligence.

Research looking into the interrelations between decisions to avoid strategic surprises in governments and business shows that usually businesses are leading in absorbing new tools and technologies before governments[26]. It appears that as intelligence communities have an urgent need for better tools to prevent emerging terror threats, they implement these highly advanced AI tools for these needs more quickly than businesses, and lessons will be drawn from this and extended into business.

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[23] Porter, M. (1998). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*, Free Press.

[24] Solomon, S. (2019). "Israel needs national vision for AI or risks falling behind, tech authority says", *the Times of Israel*, 14th. January

[25] Israel, D. (2017). "The Future of Artificial Intelligence in the IDF", *Israel Defense*, 2nd. July

[26] Barnea, A. (2020). "Strategic intelligence: a concentrated and diffused intelligence model", *Intelligence and National Security*, DOI: 10.1080/02684527.2020.1747004