

Data Driven Strategic Thinking

M. S. El-Namaki*

Maastricht School of Management, MSM, the Netherlands.

Received: 17 Oct 2022, Revised: 1 Nov. 2022, Accepted: 2 Dec. 2022.

Published online: 1 Jan 2022.

Abstract: The world of data has changed dramatically over the past decade. Ever-more data are being generated, data storage costs have plummeted, data extraction loading and transformation has assumed new dimensions and data analysis has broken new grounds. Data is revolutionizing the way companies view themselves, their industry and their future. And data analysis has become a premise to businesses of all sizes.

Data rooted corporate strategic thinking is also emerging. And this will be the focus of this article.

The article will deal with the concepts of data and that of strategic thinking. It will explore the premises of each and the emerging link. Data rooted strategic thinking modes and patterns will then be explored.

Keywords: strategic thinking, data rooted, corporate.

I the problem

The world of data has changed dramatically over the past decade. Ever-more data are being generated, data storage costs have plummeted, data extraction loading and transformation has assumed new dimensions and data analysis has broken new grounds. Data is revolutionizing the way companies view themselves, their industry and their future. And data analysis has become a premise to businesses of all sizes.

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II What is “Data” and what are data concepts?

II.1 Data, synthetic data, big data, implicit data and mass data.

Data are sets of qualitative or quantitative attributes of variables related to persons or objects. It could be constituted of a collection of facts; numbers, words, measurements and other observations compatible with computer specific software.

There is a wide variety of data.

- Human accessible data. Unstructured data that only humans can interpret and study.
- Machine accessible data. Structured information that computer software can process.
- Personal data. Person proper information.
- Transactional data. Operation or process related information.

* Corresponding author e-mail: Dr.el.namaki@gmail.com

- Web data. Internet provided information.
- Sensor data. Information gained through sensors.
- Others

(Import I O, June 28, 2018)

A significant distinction is that between real and synthetic data.

Synthetic data is a novel genre of data where data is artificially created, fully or partly, rather than being generated by actual events. The purpose is preserving privacy, testing systems or creating training data for machine learning algorithms. One of the s prime purposes of creating synthetic data, however, is simulating not yet encountered conditions for which no real data is available. (Dilmegani, July 19, 2021).

Big data, on the other hand, are “large datasets” that are too large to be reasonably processed by or stored within the traditional computing soft and hardware. The “three Vs of big data” describe some of the characteristics that make big data processing different from other data processing. There is first volume or the fact that big data sets are larger in magnitude than traditional data sets. There is then velocity or big data being processed in real time to gain insights and update the current understanding of the system. And there is finally variety or big data’s coverage of a wide range of quality sources.

“Mass Data” are data sets that combine a variety of sources including science fiction, data lakes and implicit data among others. Science fiction segment will include soft and hard science fiction data.

“Implicit data is information that is not provided intentionally but gathered from available data streams, either directly or through analysis of explicit data” (whatis.techtarget.com/definition/implicit-data).

II.2 Data base

A database is a volume of electronically stored structured data that are controlled by a database management system (DBMS). A database system combines the database management system with the relevant applications.

Most common types of databases in operation today are typically modeled in rows and columns in a series of tables to make processing and data querying efficient. The data can then be easily accessed, managed, modified, updated, controlled, and organized. Most databases resort to structured query language (SQL) for writing and querying data.

Today’s large enterprise databases are expected to deliver nearly instant responses to complex queries. They have to deal with sizable data volume, data security and accommodation of demand growth requirements. <https://www.oracle.com/database/what-is-database/>

II.3 Data analysis

Data analysis connotes resort to software based analytical models that explore data in search of past, present and future performance parameters. Analysis fall into four categories starting with the descriptive and ending with the prescriptive.



Fig.1: Predictive analytics.

Source: <http://www.gartner.com/it-glossary/predictive>

- Descriptive analytics trace past and present events. Data aggregation and data mining among other statistical tools trace and deliver trends.
- Diagnostic analytics analyses past events in order to identify root causes. Mathematical functions are the tool here.
- Predictive analytics typically combine statistical models and machine learning algorithms in order to predict the likelihood of various outcomes.
- Prescriptive analytics resort to tools as iterative analysis, ongoing testing, and deep learning in order to reach insights and probable outcomes.

In essence, businesses resorts to data analytics to guide business strategies and decisions. Predictive analytics can, for instance, suggest what could happen in response to changes to the business, and prescriptive analytics can indicate how the business should react to these changes. (Review of Data Analytics Tools, 2018).

III The evolving concept of business strategic thinking

Strategic thinking is a cognitive process that delivers visions and goals and ways and means of their fulfillment...

Today's environment is both complex and uncertain. These conditions demand compatible strategic thinking processes allowing for perspective navigation of turbulent environments. Complex situations with shifting platforms require strategic insight and innovation. "In complex systems, one cause can create multiple effects. Reactive systems using previously learnt behavior miss out on insight" (Mtongana , 2018). So environments are evolving and the challenge of setting a strategy within an evolving environment is the need to understand that there is no single future but multiple futures each with its own parameters and premises (Faria M, 2013).

One may entertain the hypothesis that AI has provided a measure of response to the disrupted environment of strategic thinking. It has induced considerable shifts in the concept, the process, the vision, the insights, the competencies and the fulfillment efforts the strategic thinking process is becoming an AI underlined system with inputs converted through strategic drivers into an output or fulfilled goals (figure 2).

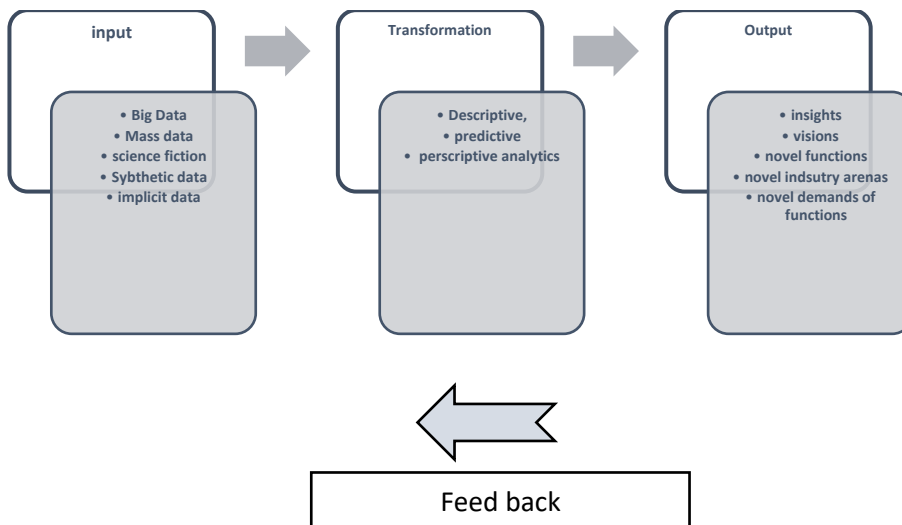


Fig.2: AI induced strategic thinking.

Source: El Namaki, 2021

Inputs

Data will constitute the prime input into future strategic thinking models. This data will extend over the entire range from the real to the synthetic and from the big to the mass.

Transformation

Transformation will, thanks to data analytics from the descriptive to the prescriptive and predictive, lead to the emergence of novel business arenas and derived instruments.

Outputs

Output will include three varieties: sub system structures, novel functions and revealing insights. Insights might turn to be the most significant outcome here.

Feed back

Feedback data will introduce essential system adjustments from inputs to transformation

This model departs from traditional corporate strategic thinking paradigms in several ways.

First there is the trigger or the point of start of the strategic thinking process. Traditional analysis puts emphasis on an environmental scanning that could reveal “opportunities and threats”. The suggested model’s point of start is enhanced big data or that mass of information with the wider scope and broader cover. Traditional scanning is replaced by data bases that encompasses almost every existing and possible variable of relevance to and of possible impact on this environment.

Second there is the conceiving of visions. Visions of the past were indeed based on a perception of futures to come. Visions of the enhanced big data era will be based on big data analysis and learning. A process that might allow these visions to go beyond the recognizable and familiar. They may address the unimaginable and the blurred. The distant and the far reaching may even go as far as science fiction (El Namaki, 2020).

Third there are the tools of the analysis. Again traditional analysis resorted to the common instruments within economic and social science domains. The above model suggests a reliance on advanced tools resting on a foundation of data analytics. Diagnostic analytics and predictive analytics will be

providing a strong impetus into the strategic thinking process. They will sketch a horizon that was unreachable before.

Fourth is the earmarking of an arena or a field of business combat. The suggested paradigm leaves the door quite open to encounters that never happened before. Competitive encounters within uncharted arenas. Competition, in that sense, is replaced by either synergy or destruction by substitution.

IV How could data drive strategic thinking?

IV.1 Data rooted thinking

Data is revolutionizing the way companies view themselves, their industry and their future. And “Data rooted strategic thinking “is emerging as a new driving force within the strategic thinking arena. It is a process that involves collecting data and extracting facts, patterns and insights as much as utilizing those findings in order to develop business strategy inducing inferences. It connotes resorting to data as a strategic premise rather than relying on intuition or observation. (Mario Faria et al, 2013).

Data rooted thinking starts by identifying driving forces within existing and emerging environments and putting together the sources from which relevant data could be extracted, actual extracting of data, building of models to test the assembled and cleaned data and extracting answers to the identified questions and constraints. . Findings could take the form of descriptive, Inferential or predictive Information. (7 Elements of a Data Strategy Analytics 9, July 9, 2021).

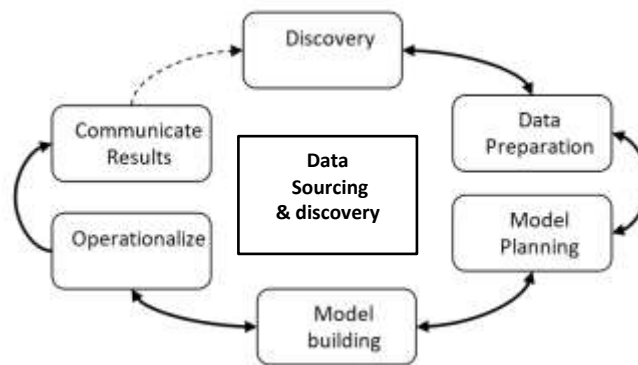


Fig.3:Data analytics cycle.

Source: Adapted from Review of Leading Data Analytics Tools, Conference Paper August 2018, International Conference on Applied Sciences and Technology

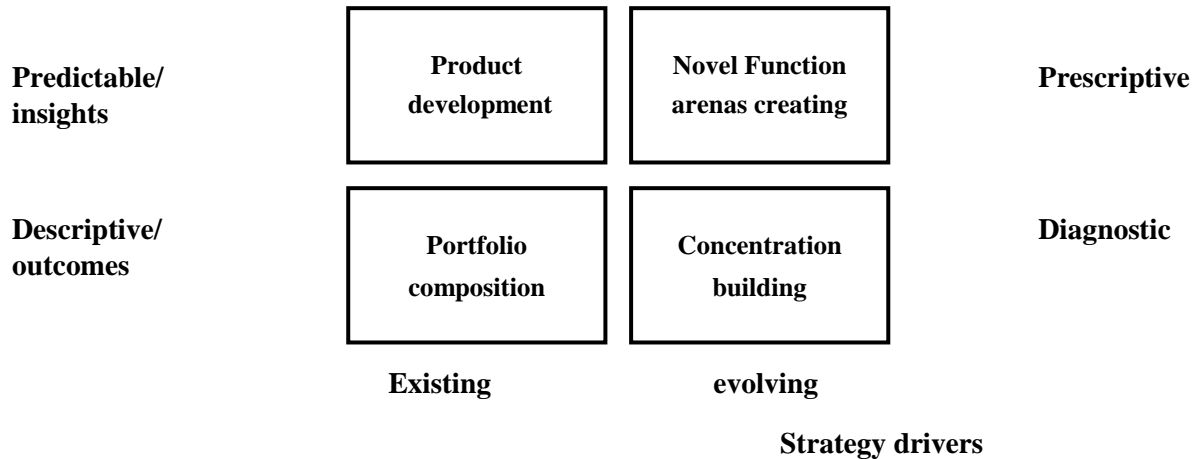
IV.3 Data strategic thinking link.

Business strategic thinking will increasingly be driven by how well a business can leverage data, apply data analytics and implement new data technologies. In effect, every business, regardless of size, will need a solid data foundation.

Data - strategy synergy requires penetrative analysis. Strategic behavior will, to a great measure, focus on insights revealed by data and the direction those insights point to. Visions and strategies would relate to what data analytics reveal as a prospect and longer term outlook.

The relationship is reflected in the following figure. The Y axis represents data segments while the X axis represents strategy drivers. It is the author’s contention, or hypothesis, that a data-strategy relationship emerges from a link between the different shapes of data segments and the equally different levels of strategy drivers.

Data analytics



Strategy drivers are those forces inducing strategic behavior. Those are either existing or evolving. Existing drivers are present day inducers of strategic behavior including, for instance, the search for synergy and or competitive advantage. Evolving drivers are those inducers resulting from insights as much as the disruptive forces of, among others, technology.

Data is segmented into two states: the diagnostic and the descriptive progressing towards the analytical and the perspective.

IV.4 Strategic behavior

Several patterns of strategic behavior could emerge from this blend of data and strategy analysis.

- **Novel function arena creation**

Predictive and prescriptive analysis combined with evolving strategy competencies could lead to a shift from products to functions or a comprehensive shift towards function arenas.

- **Product development**

Predictive and prescriptive analysis combined with existing competencies could lead to product development.

- **Concentration building**

Diagnostic and descriptive data analysis combined with evolving strategy competencies could lead to a search for concentration.

- **Portfolio composition**

Diagnostic and descriptive data analysis combined with existing strategy competencies could lead to merger and acquisition.

Data rooted strategic thinking demands prioritizing data gathering, analysis and interpretation at board and leadership level. It also requires the bringing of data to life with a data culture that induces rich insights. (Mck Digital, March 1, 2013)| Both issues are of paramount importance to the entire data-strategy link (El Namaki, 2021).

V Case evidence

- **Case one: Adobe.** Adobe resorts to an entirely data-driven model that traces customer's purchase journey, from the initial point of product discovery to the ultimate point of actual purchase. Every point in the system is fed real-time information, providing experiential and behavioral insights as well as transactional data. This allows Adobe to predict customer behavior and to conceive its own product development and innovation tracks. (Intrafocus Data driven strategy, June 24 2019).
- **Case two Netflix.** Netflix utilized data to run predictive analytics leading to the identification of future series embodying perspective customer's interest. By analyzing over 30 million 'plays' a day as well as over 4 million subscriber ratings and 3 million searches, the company was able to develop widely-acclaimed hits such as 'House of Cards'.
(www.forbes.com/sites/jonmarkman/2019/02/25/netflix)

IV Summary and conclusions

The world of data has changed dramatically over the past decade. Ever-more data are being generated, data storage costs have plummeted, data extraction loading and transformation has assumed new dimensions and data analysis has broken new grounds. Data is revolutionizing the way companies view themselves, their industry and their future. And data analysis has become a premise to businesses of all sizes.

Data rooted strategic thinking is also emerging.

The article explores the concepts of data and that of strategic thinking. The premises of each and the emerging link. Four data rooted strategic thinking patterns are identified: product development, portfolio composition, concentration building and novel functions creation.

The article is eclectic in coverage. It represents a departure from present day strategic thinking works. And it hopes to provide a mosaic for future strategic thinking concepts and operations.

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