HITACHI
Inspire the Next

Applying Economic Concepts to Big Data

Mr. Bill Schmarzo
CTO, IoT and Analytics
Hitachi Vantara

Dr. Mouwafac Sidaoui
Associate Professor and Chair, Department of
Business Analytics and Information Systems
University of San Francisco

SUMMARY

Companies are contemplating the organizational and business challenges of accounting for data as a "corporate asset" as data is more widely seen as a currency. The research explores the economics of data and analytics and defines these analogies.

The importance of data has changed. Data was once just the "exhaust" from an organization's On-Line Transactional Process (OLTP) systems. However, the economic value of data has been transformed by the big data phenomena and business leaders today see data as a monetization opportunity – and their organizations are embracing data and analytics as the *intellectual capital* of the modern organization.

More and more companies are also contemplating the organizational and business challenges of accounting for data as a "corporate asset". Data as an asset exhibits unusual characteristics when compared to other balance sheet assets (where *asset* is defined as property owned by a person or company, regarded as having value and available to meet debts, commitments, or legacies). Most assets depreciate with usage, however data **appreciates** or *gains value* with usage. That is, the more the organization uses the data across more use cases, the more valuable, complete and accurate the data becomes. These same characteristics apply to analytics, where analytics is basically "data" that has been refined or "curated" into customer, product or operational insights.

However, there are severe limitations in valuing data in the traditional balance sheet framework, so it is important that firms identify a way to account for their data. Organizations need a framework to address the "Rubik's Cube" intellectual capital challenge to learn how to identify, align and prioritize the organization's data and analytic investments. To address this challenge, the full research paper puts forth the following:

- A framework to facilitate the capture, refinement and sharing of an organization's data and analytic assets, and
- A process to help organizations prioritize where to invest their precious data and analytic resources.

Impact of Economics on Data

The research explores some broad economic concepts and ascertain their applicability on determining the economic value of an organization's data and analytics.

Theory #1: Data as an Asset

Traditional assets include both financial assets (stocks, bonds) as well as physical assets (equipment, vehicles, buildings). However, traditional assets suffer from two limitations:

- Assets are constrained by transactional limitations; that is, they cannot be used simultaneously across multiple use cases just as a person can only do one job at a time, a doctor can only perform one surgery at a time; an airplane can only fly one route at a time.
- Assets depreciate with usage; the more that you use the assets, the more the asset wears out.

Data and analytics do not suffer from transactional limitations. Data and analytics do not depreciate with usage, and in fact, appreciate with usage as the data and the analytics become more complete and accurate. This makes data and analytics powerful assets in which to invest.

Theory #2: Data as Currency

Currency is defined as an item that can be used as a medium of exchange and represents quantifiable financial value. Currency is the medium for purchasing goods or services. To expand upon the "data as currency" concept, an organization only has to "pay" once for that data (where "pay" is either building an application to capture that data or acquiring the data from a third-party source), but the same data can be used simultaneously across multiple use cases at no extra cost.

One example of using data as currency is the Adhar card – India's Unique Identification ID (UID) program that creates an exhaustive database of every Indian citizen. The Indian government is using this data as its currency to micromanage the different demographic sections in the country by identifying areas with clusters of population, analyzing the current state of these areas, forecasting the finances involved in the development and betterment of these areas and verifying it with the census data to have accurate records.

Theory #3: Data as Monetization

Most organizations are discovering that monetization of data is not achieved by directly selling the data. Rather, organizations actually monetize the ***insights*** buried in the data (i.e., customer purchase behaviors, product performance tendencies, new market demands, cyber security prevention) to uncover unmet customer and market needs that are the basis for new products, services, channels, and markets.

When examining 23andMe and Genentech, a Forbes report quoted that the data assets owned by 23andMe generated roughly $80 million of revenue by selling nearly 800,000 DNA kits. Furthermore, 23andMe has granted permission to each of its customer to use this data for research purposes, the permission that Genentech forecasts will deliver another $60 million of potential revenue.

Creating the Collaborative Value Creation Framework

Data and analytics are powerful assets in which to invest, but organizations struggle to assign these intangible assets their appropriate economic value. Organizations need a framework – what we will call the *collaborative value creation* platform – that maximizes the economic value of data and analytic assets across the organization. This framework requires:

- Identifying and prioritizing highest potential business use cases
- Building analytic profiles to facilitate analytics capture and re-use
- Identifying and prioritizing the data sources loaded into the data lake

It is our hope that this research will foster new ways for organizations to re-think how they value their data and analytics from an economic and financial perspective. The concepts covered in this research will provide a common vocabulary and approach that enables business leadership to collaborate with the IT and data science organizations on identifying and prioritizing the organization's investments in data and analytics; to create a common *collaborative value creation* platform.

GET THE RESEARCH

To download the complete research paper, please visit:
https://www.hitachivantara.com/en-us/pdf/white-paper/applying-economic-concepts-to-big-data-to-determine-finacial-value-of-organization-data-analytics.pdf