How do CSD turn the promise of Big Data and advance analytics into value?

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Big data and advanced analytics

KSEI big data initiatives
Big data happens when the data you have to process is bigger than what you can process in the given time with the current technology.

Big data is when we can handle data fast enough to make a difference.
The basic idea behind phrase Big Data is that everything we do is increasingly leaving a digital trace (or data), which we (and other) can use and analyse.

Big data is similar to small data, but bigger in size.

But having bigger, it requires different approach: technique, tools, and architecture.

Big data generates values from the storage and processing of every large quantities of digital information that cannot be analysed with traditional computing techniques.

An aim to solve new problem or old problem in a better way.
Big data characteristics

Structured data:
- Securities detail data
- Member detail data
- Investor detail data
- Securities and/or cash movement
- Settlement instruction
- Ownership
- Corporate action

Unstructured data:
- Risk management
- Regulation
- Agreement
- Social media

Main characteristics:
- Variety
  - Reporting
    - Delivered in timely manner
    - Surveillance
    - Audit
    - Big data-driven trading
    - Data transparency
    - Forecast stock market
  - Velocity
    - Garbage in and garbage out
    - Lots of data that’s potentially valuable but unused
    - Uncertainty and quality of data
  - Veracity
    - Require storage
    - Cluster
    - Parallel processing
  - Volume
    - High-level design
    - Detailed design
    - Usability
    - Timing
    - User acceptance

Additional characteristics:
- Ability to make use and provide value of the ever-increasing volumes of data

Turning Big Data into Value

The datafication of our world give us unprecedented amounts of data in term of volume, velocity, variety, veracity, and visualization. The latest technology such as cloud computing and distributed systems together with the latest software and analysis approaches allow us to leverage all types of data to gain insights and add value.
What’s driving big data in CSD

- Optimizations and predictive analytics
- Complex statistical analysis
- All types of data, and many sources
- Very large datasets
- More of areal-time

- Ad-hoc querying and reporting
- Data mining techniques
- Structured data, typical sources
- Small to mid-size datasets
The era of big data is evolving rapidly, and experiences suggest that CSD should act now. Time has come to define a pragmatic approach to big data and advanced analytics - tightly focused on how to use data to make better decisions. The big data analytics improved in the recent digital world as real time data had been driving the business.
A simple effective SWOT framework to help business leaders translate big data into actionable intelligence (Carter, 2014).

Big data technology
Real time big data isn’t just a process for storing petabytes or exabytes of data in a data warehouse. It’s about the ability of CSD to make a better decision and take meaningful action in the right time.

Fast forward to the present and technologies like Hadoop give CSD a scale and flexibility to store data before CSD know how are CSD going to process it.

Technologies such as MapReduces, Hive, and Impala enable CSD to run without changing the data structures underneath.

The CSD are using big data to target customer-centric (participant or investors) outcomes, tap into internal data and build a better information ecosystem.

It offer commercial opportunities for CSD of a comparable scale to enterprise software in the late 1980s and the internet boom of the 1990s, and the social media explosion of today.
Big data story map
Agenda

Big data and advanced analytics

KSEI big data initiatives
23 Dec 1997: the establishment of KSEI.

17 July 2000: beginning of scripless trading era and KSEI operated C-BEST.

09 Sep 2002: the acceleration of settlement cycle from T+4 to T+3.

19 May 2006: KSEI was appointed as central bank (BI) sub registry for government Bonds.

30 Aug 2016: the implementation of S-INVEST for mutual fund.

29 Jun 2015: cash settlement through central bank.

31 Jan 2012: the obligation of SID and separation of investor cash account in bank.

23 Jun 2009: the implementation of Investor Area (AKSes facility on 23 Dec 2009).

03 Oct 2016: SID for government bonds.

09 Jul 2018: the implementation of C-BEST Next G.

26 Nov 2018: the acceleration of settlement cycle from T+3 to T+2.
KSEI big data initiatives

KSEI as Information and Financial Hub

- Excellent data custody
- Reliable data processing
- Advanced analytics

Data empowerment for business
Data warehouse

- Investor
- Securities ownership
- Transaction
- Movement
- Mutual fund activities
- Scrip Securities ownership

Strategic use case

- Surveillance
- Potential fraud identification
- Operation efficiency
- Trend prediction
- Risk controlling
- etc

Counterpart data, social media, voice, news
KSEI’s SMARTS surveillance system

Utilizing graph data structure to show the relationship between surveillance object
Demographic of investor

**Gender**
- Male: 59%
- Female: 41%

**Occupation**

**Age**

**Investor Type**
Key success factors for big data initiatives

- Leadership
- Data understanding and quality
- Business alignment and needs
- Internal organization capabilities
- Data privacy and protection
- Appropriate big data platform and technology
Thank You
Arigato Gozaimasu
Merci
Shukraan
Xièxiè
Terima kasih