Algorithmic Trading
Present and Future in Korea

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Backgrounds

Brief history of brokerage Algorithmic trading in Korea

- 2003 FIX Adoption (Samsung Asset management)
- 2003 FIX order network conection (Koscom STP-HUB)
- 2006 Koscom PowerAlgo (Algorithmic Trading Platform)
- 2013 Koscom K-FRONT CEP (Algorithmic Trading Platform)

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Clarify the terms, "Algorithmic Trading"

Algorithmic Trading were originally developed for use by the buy-side to manage orders and to reduce market impact by optimising trade execution once the buy-and-sell decisions had been made elsewhere.
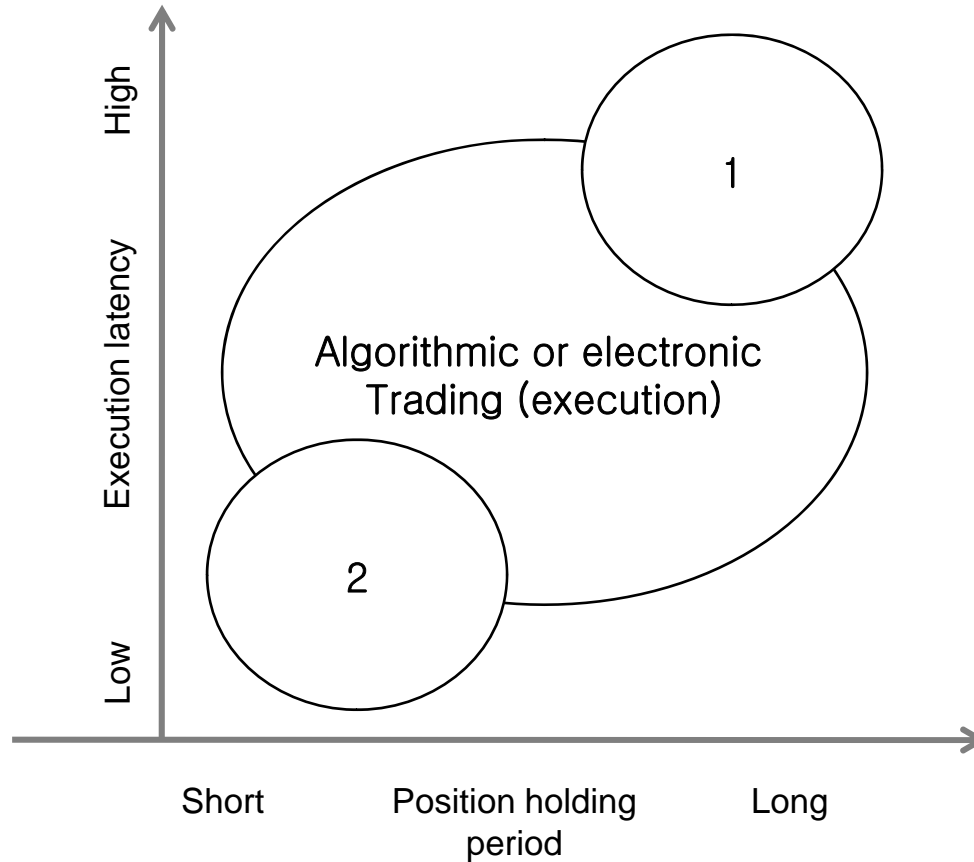
Algorithms typically determine the timing, price, quantity, and routing orders, reducing market impact by optimally and sometimes randomly breaking large orders into smaller ones, and closely tracking benchmarks over the execution interval.

(Hendershott, T., James, C.M., and A. Menkveld(2010). Does Algorithmic Trading Improve Liquidity? Journal of Finance)

Clarify the terms, "High Frequency Trading(HFT)"

HFT is an subset of algorithmic trading where a large number of orders (which are usually fairly small in size) are sent into the market at high speed, with round-trip execution times measured in microseconds.

Brogaard, J. High Frequency Trading and its Impact on Market Quality. Northwestern University Kellogg School on Management Working Paper. 2010.

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1) Trading long-term investing
2) High-frequency trading

Source: Aldridge,I. High-Frequency Trading. John Wiley & Sons. 2010
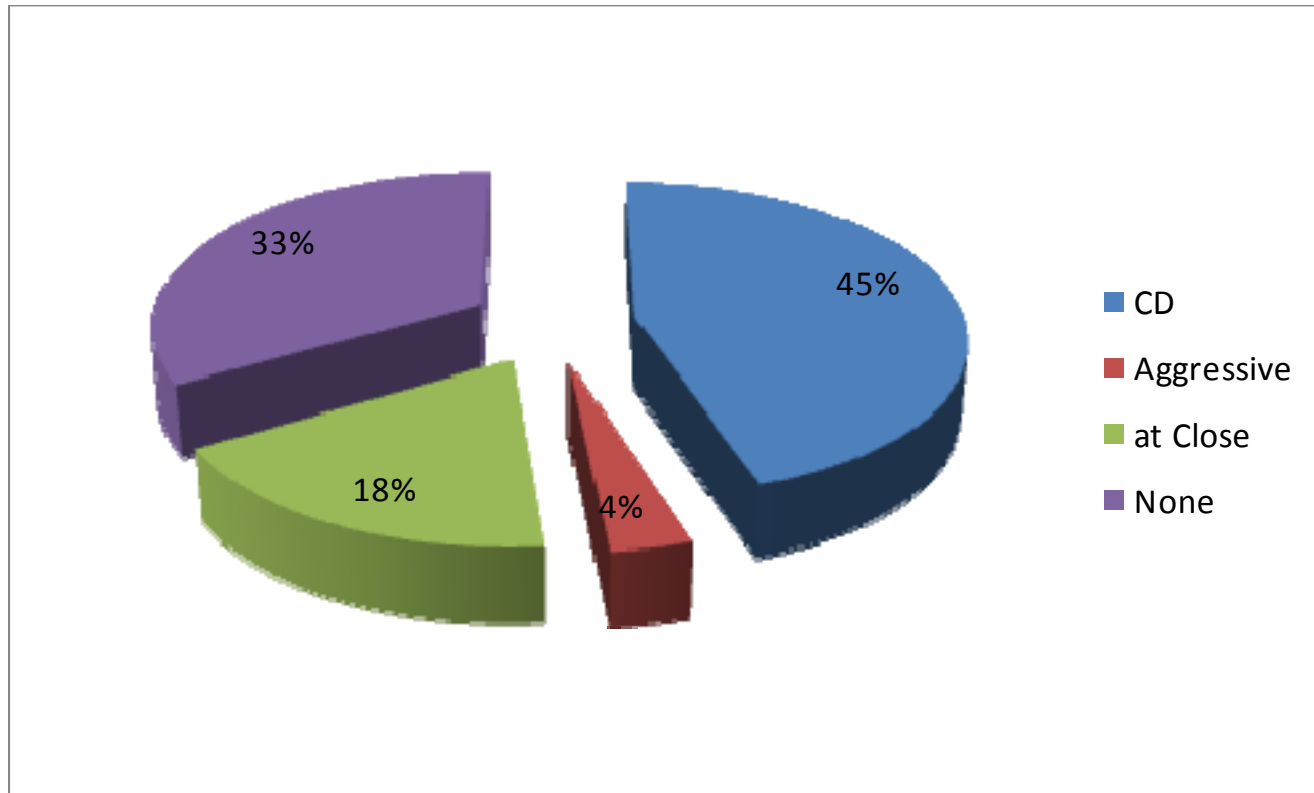
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Simple statistics of algorithmic orders
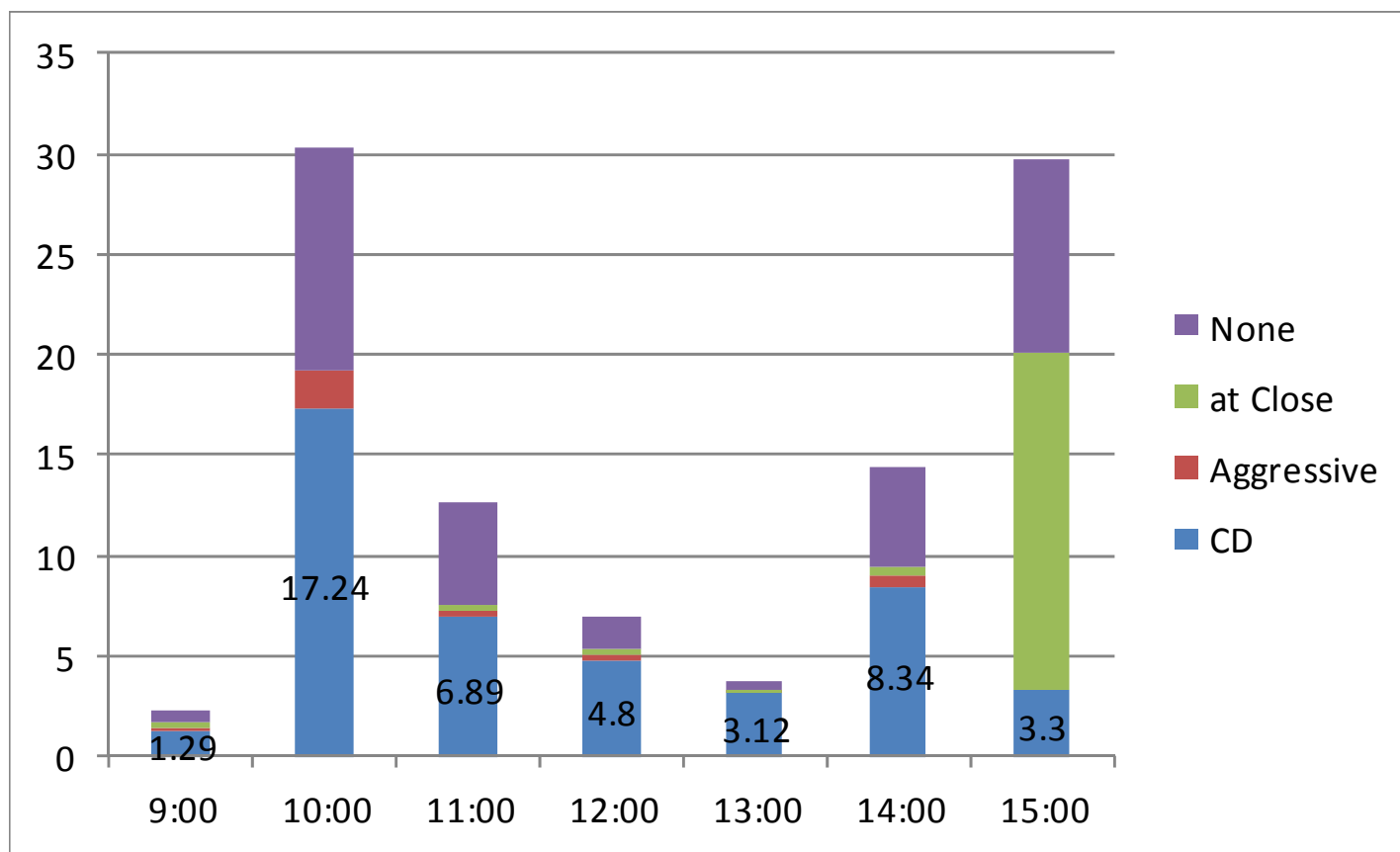
Execution Strategies

- CD is "Careful Discretion", care orders. But it uses as same as TWAP in Korea
- "Aggressive" means "make fills as fast as possible"
- "at close" is same as "MOC"
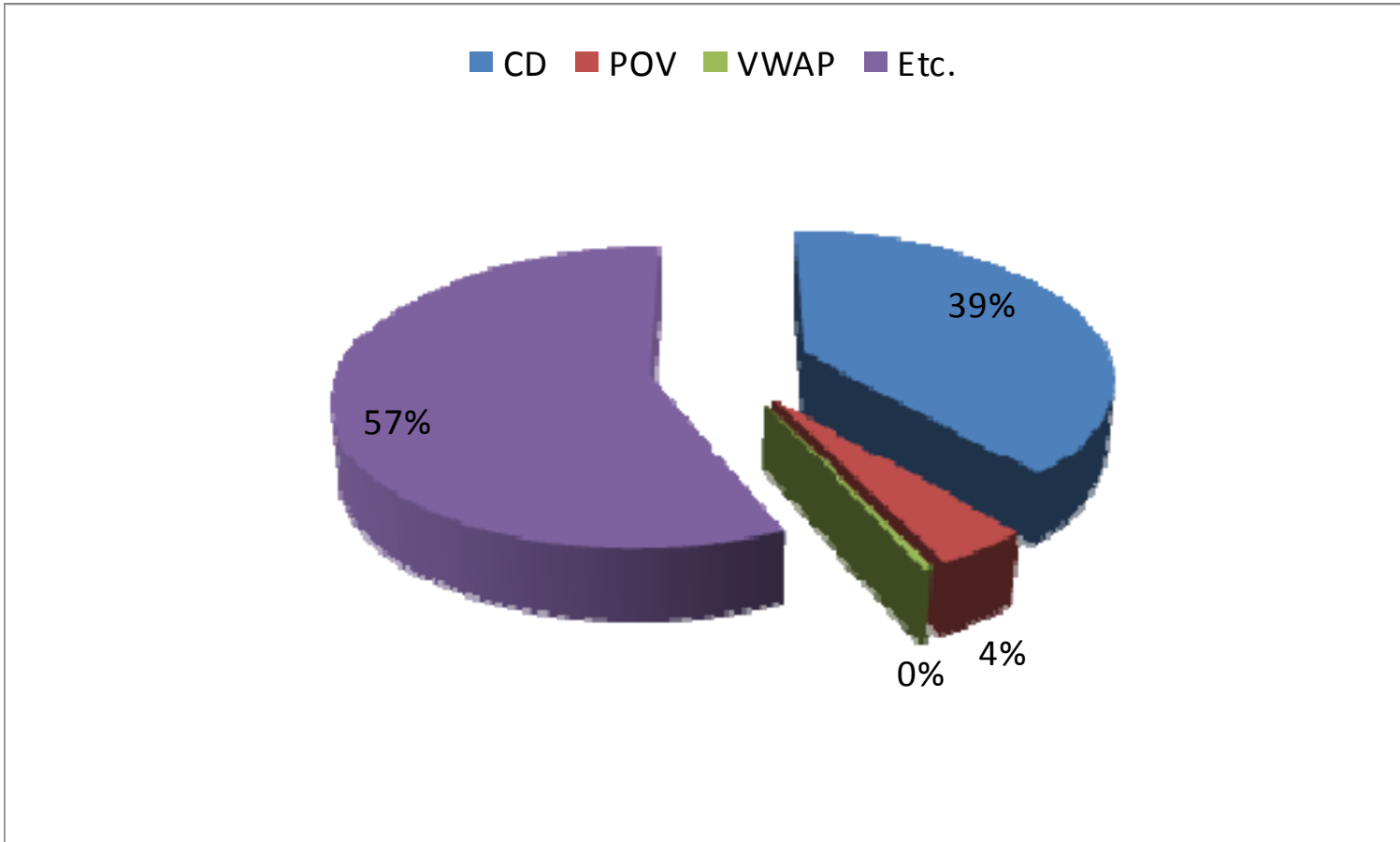- They are executed with both "high touch" and "low touch"

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Local Buy-side order transactions in 2009 (15days sample)

- CD
- Aggressive
- at Close
- None

45%
33%
18%
4%

Source: Koscom STP-HUB

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The number of orders with time schedule

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Local Buy-side order transactions in Nov. 2013 (1day sample)

Legend: ■ CD ■ POV ■ VWAP ■ Etc.

Pie chart values: 39%, 57%, 4%, 0%

45% of buy-side orders are Algo-type orders, such as CD(TWAP), POV, VWAP.

The number of VWAP orders are under 0.01% because Buy-side don't use VWAP benchmark to estimate broker performance. And also it is prohibited from charging transaction fee related to any benchmark in regulation.

Algorithmic trading is using only for trading operational efficiency not for breaking down any complicated order instructions or reducing market impact. It's why simple CD(TWAP) orders are more 90% in Algo-type orders.
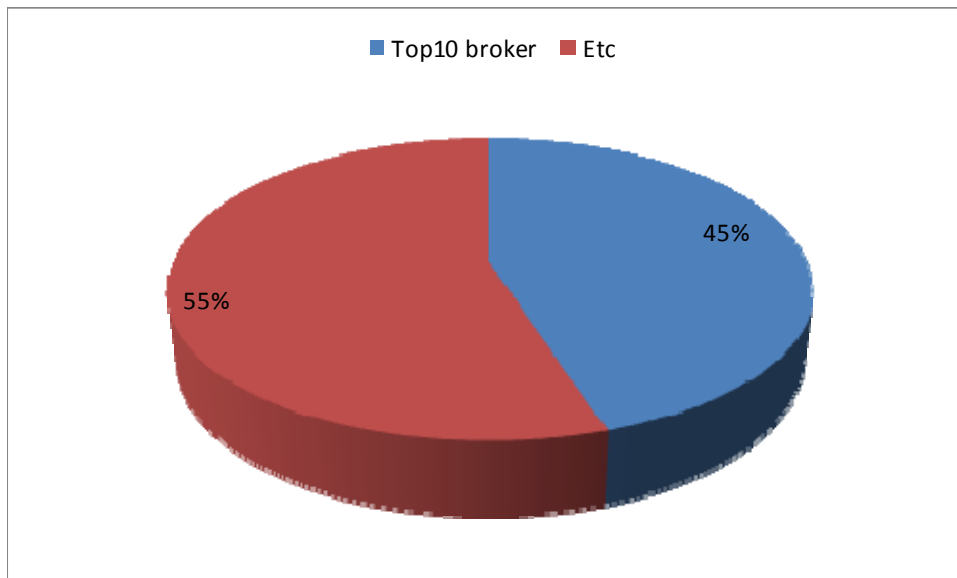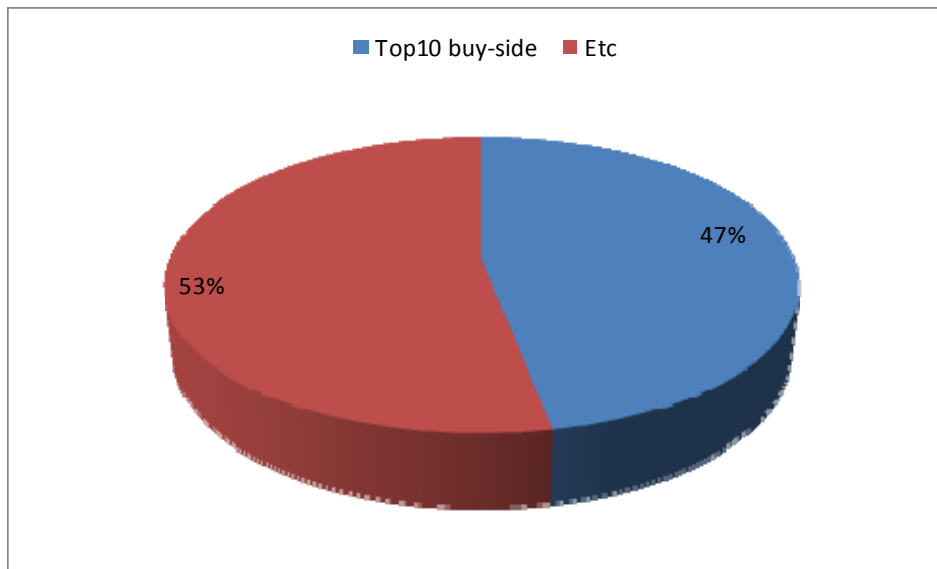
Market environment and ALGO business

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Total 82 buy-side's are connected to Koscom STP-HUB, 66% are asset management firms which can manage fund account and 33% are investment advisory firms for individual accounts.

■ Asset Management   ■ Investment Advisory

28, 34%

54, 66%

■ Asset Management   ■ Investment Advisory

15%

85%
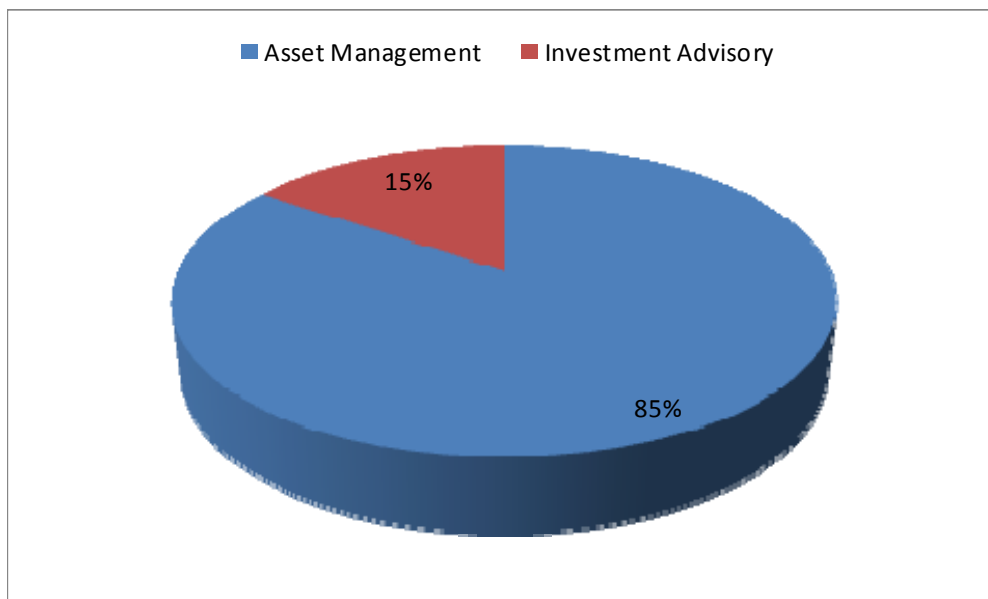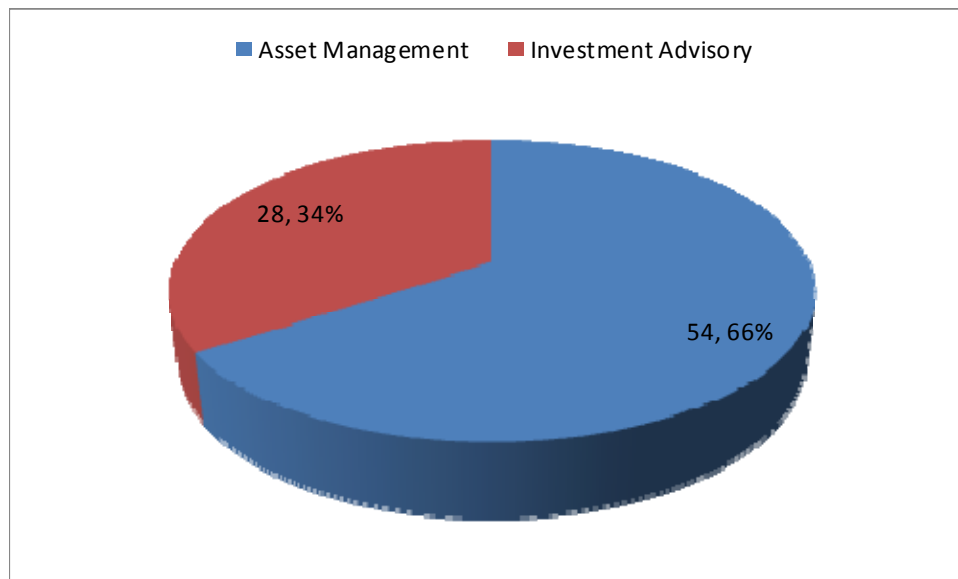
The number of FIX order transactions are much biased to asset management firms.

Source: Koscom STP-HUB

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Top 10 Buy-side's market share of FIX order transaction (10/92)

■ Top10 buy-side ■ Etc

47%

53%

Top 10 Sell-side's market share of FIX order transactions (10/61)

■ Top10 broker ■ Etc

45%

55%

Source: Koscom STP-HUB

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The market share of big buy-and-sell sides are around 50% and most IT cost expenditure (include FIX and ALGO) are for them.

For mid and small buy-sides perspective, they need to seek for tech-brokers who can propose little transaction fees and market impacts.

And also for sell-sides perspective, they should invest IT tech, Alogs and DMA to compete with big brokers. To overcome their lack of affordability, they can use cloud base IT infra, ASPs, outsourcing, and sharing services.

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Buy-side direct model.

The most straight forward business model in which the buy-side develops its own algorithmic trading system (internal or 3rd party) and conducts algorithmic trading.
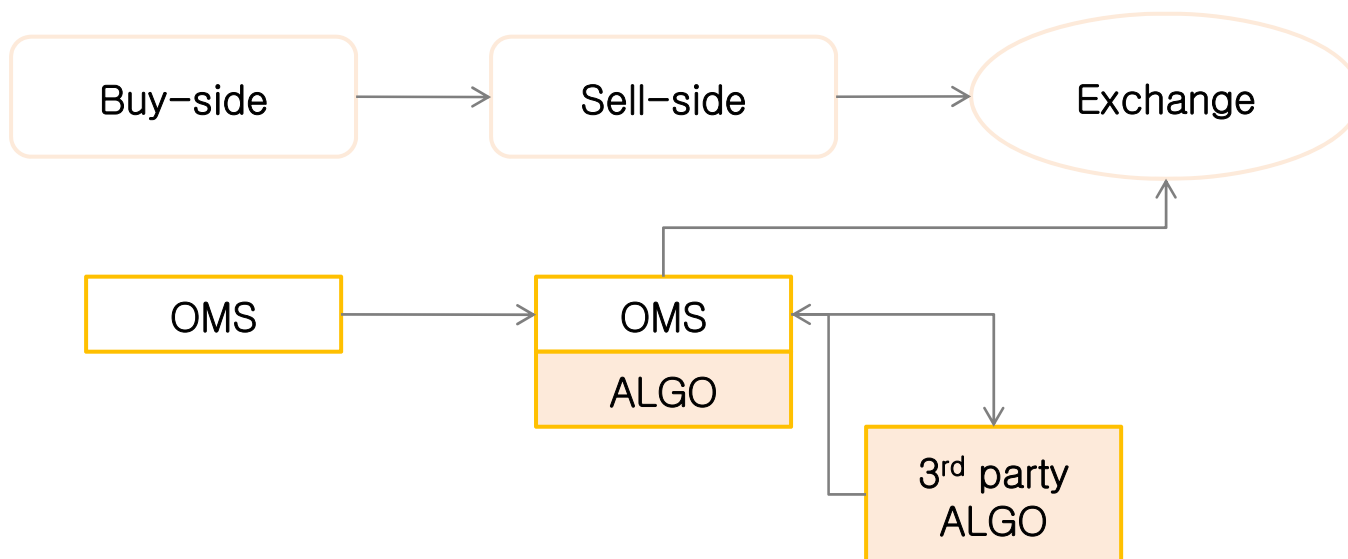
Focuses on sophisticated hedge funds and quantitatively driven investment managements that are comfortable building their own Algo strategies and systems. They can rely on multiple 3rd parties to develop and maintain algo trading operations.
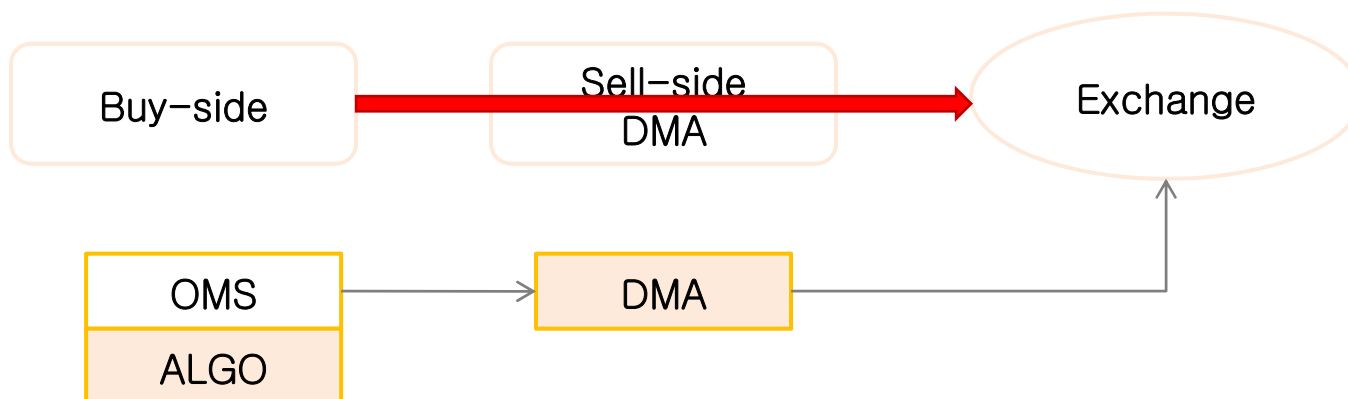
Sell-side intermediary model.

Sell-side provide both technology and access to broker-provided algorithms to buy-side firms.

Sell-side provide their trading strategies and IT support to buy-side clients. And also they seek out partnerships with various OMS and EMS providers to increase their algorithm distribution channels.

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Sell-side introducing model.

Sell-side provide its own algorithmic trading services to smaller brokers that may lack sophisticated trading capabilities or regional brokers.

It may have regulation issues in Korea. (IT outsourcing or Biz outsourcing)
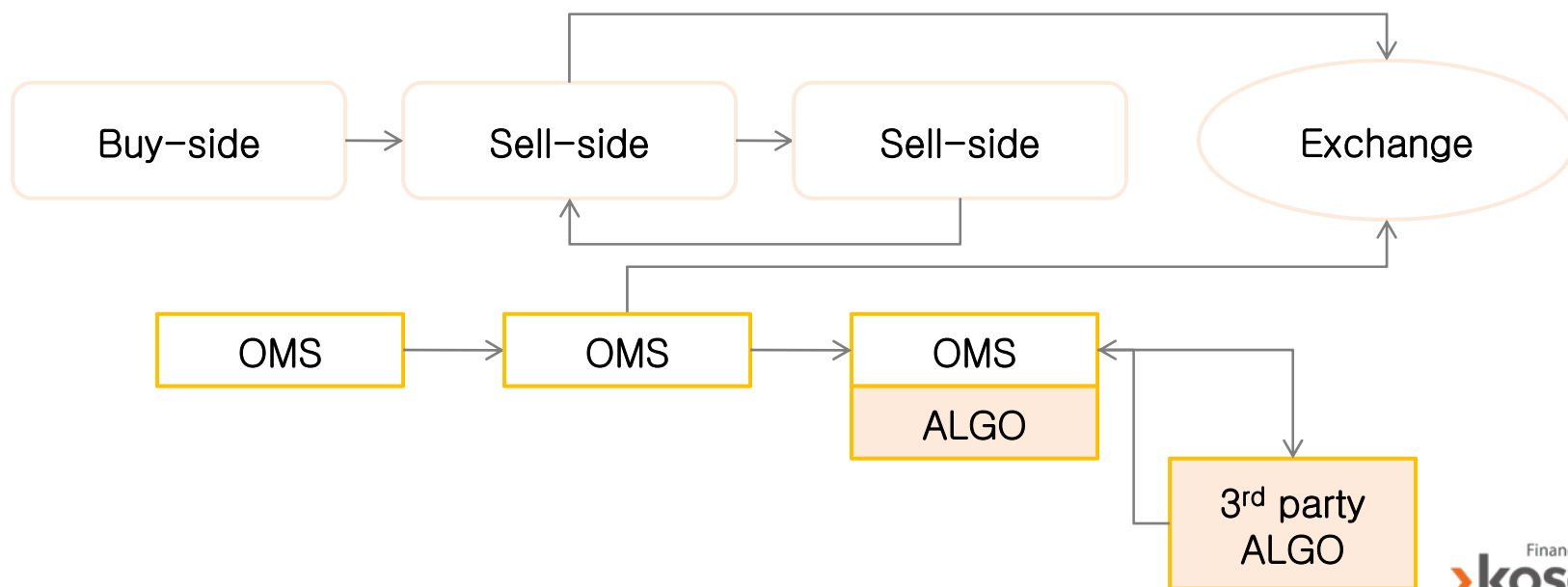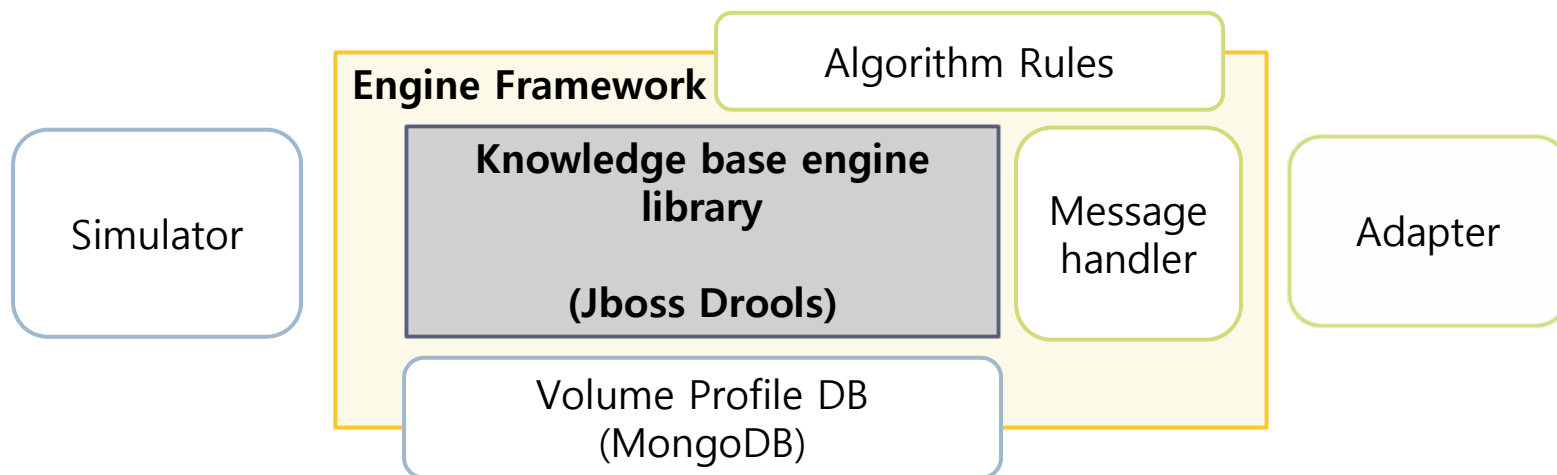
Open, Share, and Participate – The future of algorithmic trading

The algorithmic trading business did not go further from its beginning stages in Korea. The Algo strategies still remains in first generation as simple TWAP, POV, etc. There should be more researches for market impact model and adaptive strategies based on it.

The future of Algo trading in Korea depends on how we can share the "contents". As there are not enough resources, investment, and researchers, "**Open domestic knowledge, share the costs, and participate into communities**" are the only competitive edge we can have.

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Koscom K-FRONT CEP Algorithmic trading platform uses open source knowledge base engine and NoSQL DB. It makes 75% cost reduce effect than cost of Koscom PowerAlgo which used a commercial CEP platform.

Q and A