AI Adoption Barriers in Brokerage Firms: A Systematic Literature Review

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Abstract

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1. Introduction

Introduction still need to be written

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Most people have bought a stock at some point, or at least know someone who has. What they probably don't think about is. What happens after they press the button. The trade doesn't just appear in their account, it passes through a chain of licensed firms, clearing systems, and legal processes before ownership actually changes hands. The brokerage is where that chain starts.

Let's put it simply, a brokerage is a licensed intermediary that executes trades on behalf of clients who cannot access financial exchanges directly. The NYSE, NASDAQ, and equivalents don't let just anyone connect to their systems. Exchange membership requires regulatory approval, significant capital reserves, and ongoing compliance obligations that most investors don't want. A brokerage provides those services for a commission.

That much is common to all brokerages. Where they diverge is in who their clients are, and that divergence turns out to matter enormously for everything from regulatory obligations to operational infrastructure. The industry breaks into two distinct models: retail and wholesale.

2.1 Retail Brokerage

Retail brokerages serve private individuals, people investing personal savings through a mobile app or online platform. The typical retail client buys shares in a company, maybe some ETFs, occasionally commodities[X]. Transaction sizes are modest. On the other hand the amount of clients a broker has is enormous.

Because these clients are private individuals with no assumed financial expertise, they get the strongest regulatory protections available. Under MiFID II, brokerages must assess the suitability and appropriateness of investments before providing them, and warn or restrict clients where a product is not appropriate [1]. The basic idea is protective on purpose: small everyday investors are seen as more at risk, in a way that big professional investors are not. A place where retail investors can start trading is Fidelity[1], LYNX[2], and Easybroker[3].

[1] https://www.fidelity.com/
[2] https://www.lynx.nl/
[3] https://www.easybroker.nl/

2.2 Wholesale Brokerage

Wholesale brokerage is a different business serving a different world. The clients here are not individuals. They are asset managers running billion-euro portfolios, hedge funds executing complex arbitrage strategies, pension funds managing retirement savings at scale, and banks trading on their own account. These are professional counterparties, and they are treated as such.

Wholesale clients are permitted to trade across the full range of available instruments: equities, fixed income, derivatives, structured products, and more without the product restrictions that apply in retail. The assumption is that they understand what they're doing and can absorb the associated risks. This doesn't mean there's no regulation (there is, and it's substantial), but the focus shifts away from protecting clients from themselves and toward market integrity, systemic risk, and operational standards instead.[x]

Beyond execution, wholesale brokerages typically offer a broader service stack: proprietary research, direct market access, and hands-on client support tailored to the specific needs of institutional accounts. DMA ONE[4] and Liquidnet[5] are examples of firms operating in this segment. Table 1 lays out the key contrasts between the two retail and wholesale brokerage.

Table 1: Key differences between retail and wholesale brokerage

	Retail	**Wholesale**
1	High quantity of transactions	Low quantity of transactions
2	Highest level of regulatory client protection	Reduced regulatory client protection
3	Low individual transaction value	High individual transaction value
4	Restricted to certain investment products	Access to the full range of investment products

The differences in the table are about the client relationship. What can the client do and how does a broker service the client. When a client makes a trade retail or wholesale a post-trade machinery kicks in. Both types of brokerage settle trades the same way. Which raises the obvious question: what does settlement actually involve?

2.3 The Settlement Process

A trade is not finished when it's executed. Execution just means two parties have agreed on a price. The securities still need to change hands, and so does the money. Until both of those things happen, neither side has fully delivered on their side of the deal. The process of making that happen is called settlement.

More precisely, settlement is the exchange of securities for payment, formally known as *Delivery versus Payment* (DvP). The two legs are linked so that neither party is left

[4] https://www.dma.world/one
[5] https://www.liquidnet.com/

exposed, a principle set out by the central-bank community in the early 1990s [2]. Weiss [3] describes the whole settlement circuit as the "plumbing" of financial markets. That comparison is accurate. Settlement is what actually moves the cash and the securities between parties after a trade is agreed, and like real plumbing it sits in the background where nobody looks at it.

Getting from trade agreement to completed settlement involves several layers of infrastructure. The most important piece to understand is the *Central Counterparty Clearing House*, or CCP. When a trade is executed, the CCP inserts itself in the middle, it becomes the buyer to every seller, and the seller to every buyer. If one counterparty defaults, the CCP covers the other side. The other party gets made whole regardless. CCPs also *net* positions across participants: instead of settling each individual trade, they calculate what each firm owes or is owed across all of its activity in a given instrument and settle a single net figure. For retail brokers routing thousands of small client orders this is efficient, although the size of the netting benefit depends on how concentrated clearing is across CCPs [4].

While wholesale trades utilize this same CCP infrastructure, the post-trade pipeline for institutional market participants is far more fragmented. Institutional trades pass through a more complex chain of custodians holding client securities, prime brokers providing financing and clearing, correspondent banks managing cross-border cash, central securities depositories (CSDs) maintaining the official ownership records. Each of these intermediaries runs its own systems. Getting them all to agree on what needs to move, when, and to whom requires coordination that is partly automated and partly manual. [5] covers this infrastructure in detail. The consequence of all this complexity is straightforward: more things can go wrong, and when they do, a human usually has to fix it.

The settlement lifecycle itself breaks into four phases, regardless of brokerage type:

1. **Trade Capture:** Immediately after execution, the details: instrument, price, quantity and counterparty are recorded.
2. **Confirmation and Matching:** Both sides of the trade independently submit their record of what was agreed. If the two records match, the trade can proceed. If they don't, there's a discrepancy that has to be resolved before anything else can happen.
3. **Clearing:** Net obligations are calculated across all matched trades, typically with a CCP stepping in to guarantee delivery and reduce the bilateral exposure between counterparties.
4. **Settlement:** The actual transfer of securities to the buyer, cash to the seller, legal ownership updated. The trade is done.

Figure 1 illustrates how these phases connect in practice for a typical wholesale trade, from the initial order through to final settlement. What the diagram makes visible is the bilateral nature of the process: both sides independently reconcile their books, custodians operate on each end, and the central depository sits between them coordinating the actual transfer.

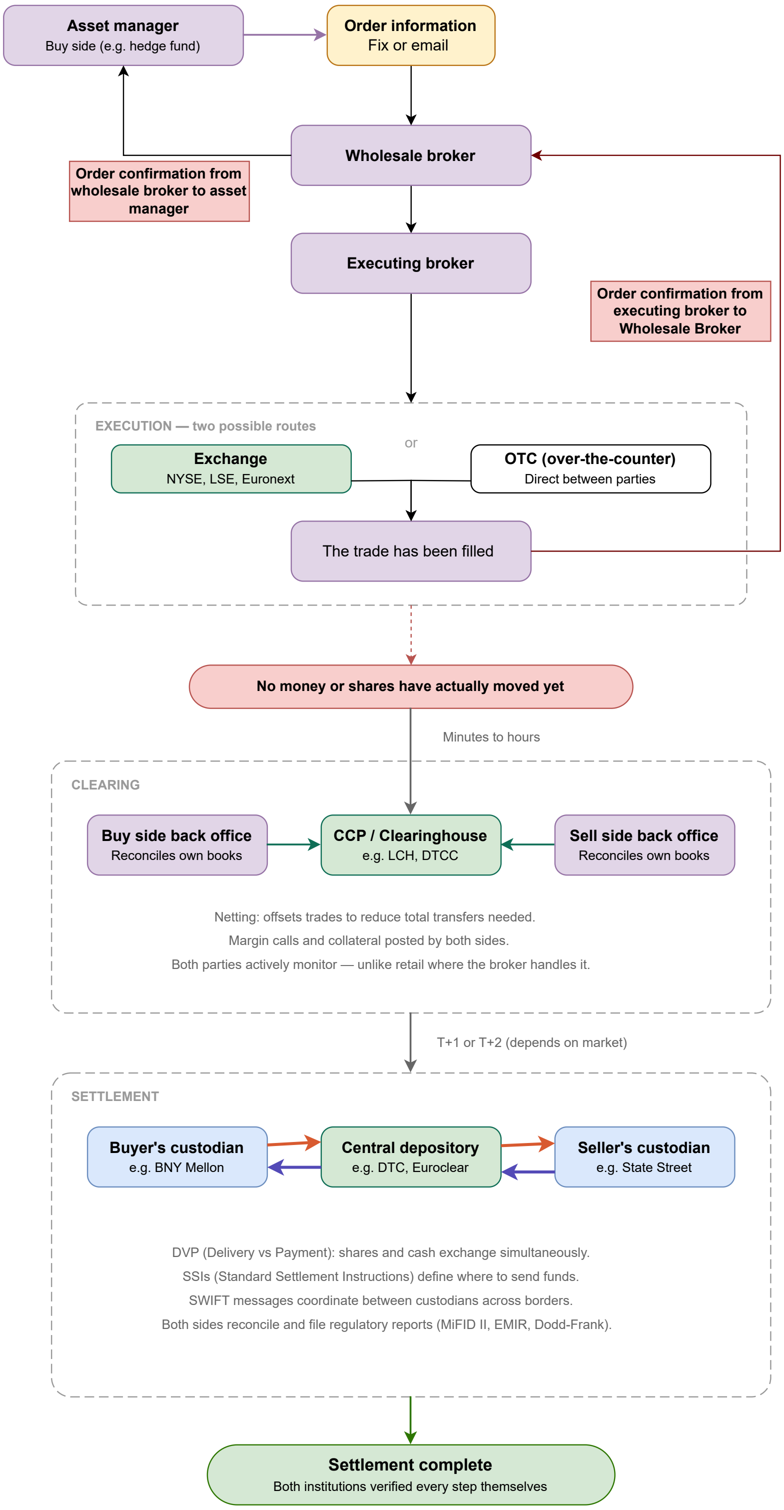

Figure 1: The wholesale settlement process, from order initiation through execution, clearing, and final settlement.