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BETTER, CHEAPER, BIONIC

THE IMPACT OF DIGITAL ON PORTFOLIO MANAGEMENT

SOME TIME IN THE NOT-TOO-DISTANT FUTURE...

In what later became known as "Laplace's Demon", the 19th Century mathematician Pierre-Simon Laplace theorised as follows:

"We may regard the present state of the universe as the effect of its past and the cause of its future. An intellect which at a certain moment would know all forces that set nature in motion, and all positions of all items of which nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect nothing would be uncertain and the future just like the past would be present before its eyes[1]*."*

Of course, the universe, much less financial markets, doesn't behave like this. But as you sip your morning coffee scrolling through a list of recommended trades produced by your trading system, *LaplaceDemon2100*, you can't help but feel you are getting closer to becoming that super-intelligent, perfectly prognosticating demon after all. While you were sleeping, LD2100 (that's what you call it) processed billions of pieces of information from bits of text, video, official statistics, aerial photos of ports, you name it. It developed the list of trades in a matter of minutes; it would have taken you a lifetime.

The trades, however, are based all on your own ideas, your painstaking research into the tangled web of recursive interrelationships between the economy and the markets. Your research has been aided by the massive processing power at your disposal, but all the ideas trace back to your original inspiration. You feel a deep sense of satisfaction.

But you know that keeping your edge will not be easy.

Your father, also a money manager, used to tell you stories about how he would stay up late scouring through quarterly filings, offering memorandums of CDOs and stacks of analyst reports to get the slightest edge. Now everyone does that with natural language processing and other advanced machine-based techniques. As information availability has exploded alongside capabilities to process it, it has simply made that slight edge more difficult to attain. You know that alpha doesn't come from processing power alone – that is cheap. Alpha comes from human ingenuity, and that is expensive (and exhausting).

So you have given up paying attention to the financial press or analyst reports and you never bother reacting to the latest news feeds. LD2100 has got you covered. Now you spend all your time thinking about how to decipher the unimaginable complexity of the markets, what information can provide a better window into the world and most importantly how that information will move market prices. But now you have got LD2100 to actually make your ideas a reality. You have become a bionic investor.

So you sit back in your chair, take another sip of coffee and turn away from your market data screens and all those monitors flickering green and red, which you consider largely random and unimportant noise. And you just think: "How can I use data from GPS-enabled fitness trackers to understand if there is a shift from running to cycling and, if so, what the impact on the value of sporting goods manufacturers might be?" Next to you, LD2100 is patiently waiting to be told what to do.

1 Laplace, Pierre Simon, *A Philosophical Essay on Probabilities*

INTRODUCTION: THE DANGERS OF UNDERESTIMATING DIGITAL DISRUPTION

The path of history has seen machines taking over an increasingly large share of what was previously performed by humans. The process has usually been gradual, rather than characterised by sudden change. We would argue, however, that what the world is now experiencing is more revolutionary than evolutionary. The explosion in available information, combined with a corresponding rapid expansion of the capability to organise and analyse that information, is reshaping the commercial sphere. It is facilitating new business models, redefining the respective roles of humans and machines and recalibrating how best to combine the unique capabilities of each.

For the asset management industry, much of the talk has centred on how technological developments will change client-facing activities – how you win and service clients and how you communicate with or advise them. There is relatively little discussion about how new applications of technology and sources of information will impact the investment engine itself – from how alpha is generated, to how portfolio solutions are customised, to how trades are executed. This is a dangerous omission. The *digital* technology revolution will influence every aspect of the asset management industry.

In this paper we argue that there are a handful of critical questions that all incumbent asset management firms must ask themselves in order to respond to the technological changes reshaping the Industry. It is through understanding the mechanism of digital disruption, and its impact on all aspects of the business, that asset managers can devise appropriate strategies to turn these digital threats into digital opportunities.

THE ALL-ENCOMPASSING NATURE OF DIGITAL AND HOW IT MAY SHAPE ASSET MANAGEMENT

In assessing how digital impacts the asset management industry (and any industry for that matter), we start from the basic observation that, at its core, digital technology tends to augment human decision-making. Consequently, if you consider every place where a human has to make a decision, whether that is how to service a customer, select a security, build a portfolio or execute a trade, you have to assess how digital will impact that decision. This is why the digital revolution is so all-encompassing – it has the potential to impact the way in which *every* decision is made in an organisation and thereby remould the entire asset management activity chain.

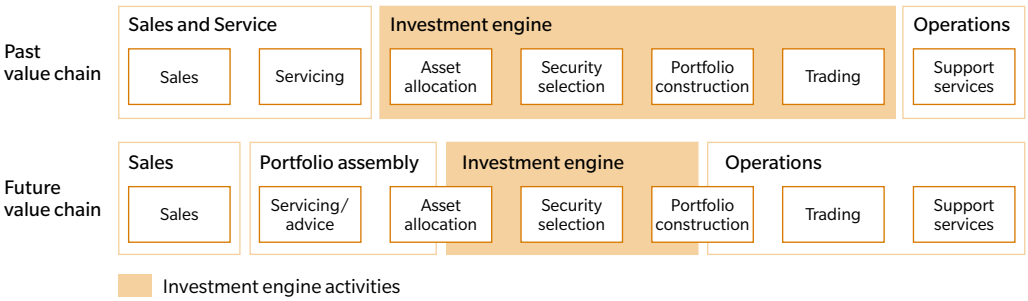
Consider the story of LD2100. While intended to be futuristic, it actually isn't too far from the current reality, where decisions around security selection and portfolio construction are increasingly becoming "bionic", a blend of human and machine, with the machine taking on a more prominent role than could have been envisaged even a short time ago.

But the implications are broader than this example highlights. In the purest sense, it probably doesn't even qualify as "disruptive"; it is simply an example of automation – replacing high-cost, high-volume, standardised human activity with a machine that can process information and execute instructions based on rules. The next stage of disruption, as described by Clayton Christensen in his work[2] on Disruptive Innovation in the early 1990s, is more significant. During this stage, a newcomer unseats incumbents by offering clients a trade-off based on lower cost but lower quality, then improving quality over successive generations until the disruptive offering is both cheaper and on a par with (or even better than) the legacy offering. Disruptive competitors can attack the value chain in two ways:

1. **Better.** Isolating individual links in the existing chain and attacking them by using superior solutions delivered at scale. For example, we expect Big Data to have a major impact on research and security selection, as the traditional reliance on analyst reports and access to company management is swamped by a wave of new information sources and analytical tools.
2. **Cheaper.** Enveloping the existing value chain and addressing a larger client need that legacy providers cannot easily satisfy. For example, this could be achieved by redefining the retirement challenge beyond simply the need for income in retirement and taking a holistic view of an individual's needs after employment.

We are seeing this disruptive process happen in real time, as digital adopters put pressure on the asset management value chain by offering access to better or cheaper investment solutions. While much has been said on how digital technologies are affecting the client experience, we see new types of offerings and capabilities having a profound impact on the investment engine itself. Asset allocation and client advice will draw closer together, as clients demand specific investment solutions rather than generic products. Portfolio construction will also combine with trading to become more automated and part of operations, as illustrated in Exhibit 1.

Exhibit 1



2 Christensen, Clayton *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, 1997

This reshaping of the value chain, however, does not herald the end of the human side of asset management. Rather, the way humans can create value beyond an automated approach will be redefined and new business models will combine the best of human and automated features. This will create a spectrum from fully digitally driven advice (the next generation of robo), through to digitally-enhanced human approaches across the value chain (Bionic). But, crucially, human investment skills will also need to adapt and refocus on activities that people do best and for which the client is willing to pay the necessary premium.

SAME ANALOGUE PROBLEMS, NEW DIGITAL SOLUTIONS

While much of the focus is on the disruptive power of digital and the competitive environment it fosters, the industry simultaneously has to deal with some fundamental trends challenging the core investment engine.

1. **Client return expectations**, which are shifting investment demand from relative return products to "solutions", absolute returns and target outcomes.
2. **Individualisation**, as investment decisions shift from institutions to individuals, with resulting changes in types of clients, what investment offerings they want and how they want to be served.

These trends have, in turn, raised fundamental questions about the relative merits of active and passive investing, the role of stock selection versus asset allocation and asset managers' role in providing advice, not to mention their appetite for doing so given the increasing stringency of regulation in this area. Although these challenges were not caused by digital advances, we expect that digital in its broadest sense will play a part in responding to them, as outlined in Exhibit 2.

Exhibit 2

AM INDUSTRY CHALLENGE	POTENTIAL DIGITAL RESPONSE
Return expectations (including active vs. passive, asset allocation vs. security selection)	• Data-driven analysis to identify investment trends • Big Data research tools, social networks and crowdsourced ideas and information • Broader information sources to enhance analysis on individual securities/ exposure themes/portfolio construction • Enhanced risk factor analysis and scenario testing to assess robustness of outcomes
Individualisation (including provision of advice)	• Automated advice (Robo) • Tools for portfolio individualisation • Machine-supported inputs to design asset allocation for target outcome portfolios • Stock picking for low-cost self-defined portfolios – for example as an alternative to exchange-traded funds (ETFs) • Software to optimise trade execution with smart trading processes • Flexible trading platform enabling cost-effective individualisation

As we look at all the challenges facing asset managers it is getting harder to find examples of new approaches that will not depend in some way on the smart exploitation of data, machine automation, electronic access and/or distribution channels.

Digital can be the disruptor and the saviour. Which one will depend on how a firm thinks about digital and hence what the most appropriate response should be. We outline an approach below that we believe gives asset managers a much better chance of turning the digital threat into the digital opportunity.

CONCLUSION: HOW FIRMS SHOULD RESPOND

Asset management, and the investment engine element in particular, is lagging behind other industry sectors in terms of digital penetration. That does not mean that the eventual impact will be weaker as a result, but simply that various factors have combined to delay the onset of digital disruption. Few existing activities, no matter how complex, have demonstrated such a degree of perfection that they cannot be improved through simplification, industrialisation, automation, information enrichment or the smart application of technology in one way or another. The process of managing investments is likely to be no different. The asset management industry will be disrupted in a fundamental way. The only question is: how?

Understanding the mechanisms by which disruption happens is a critical first step in identifying those areas most at risk and ultimately designing a strategy that can turn these threats into opportunities. To assess the nature of the threat and opportunity that digital creates for each part of the value chain, we believe asset management firms urgently need to consider five fundamental questions:

1. **Under-Automation** – where is expensive human activity performing tasks that could be done faster or cheaper by machines (computing devices)?

   Examples: What can we automate in the research process? Do humans really have to read analyst reports? How can technology be used more in portfolio construction and trading? Can the back office be further automated?

2. **Plausible Disruption** – where could a simpler, cheaper (but not necessarily as good) solution meet the needs of a client segment more efficiently? Where are you making excess profits by charging far more than an activity actually costs or is worth to some of these segments?

   Examples: How can robo-advised or dynamically tailored portfolios replace standard defined contribution offerings?

3. **The Weakest Link** – where do you currently charge a premium for services of below average quality?

   Examples: The most vulnerable areas have often been those that appear to be natural monopolies, such as payment networks or registered taxis, when in fact they have been ripe for disintermediation and lower charges. Are there similar vulnerabilities for asset management firms where the fee charged is high compared with the perceived added value or the level of customisation/advice? For example, in higher fee active products, or where a provider is unable to customise portfolios despite charging fees associated with dispensing expensive advice?

4. **Partial Solution** – where are you currently solving only part of the client's problem and are potentially vulnerable to a competitor or substitute who sees the problem differently and reframes the solution to get between you and the client?

   Examples: The asset management industry is focused at selling products to accumulate wealth, but how can it help guide the process of decumulation throughout an individual's retirement? For example, how can digital tools be used to combine decumulation advice with customized portfolios that dynamically adjust income withdrawal capacity?

5. **Information Disadvantage** – where are you using only a small fraction of potentially available information to support high-value decisions?

   Examples: Will there be more movement towards bionic approaches to alpha generation? What impact might that have on non-adopters? Can more data be used in client profiling, for the purposes of both asset allocation and portfolio construction?

Incumbent asset management providers are vulnerable to all of these threats. In some cases, the disruptor will be a new entrant wielding a combination of technology and information as a game-changing weapon. Perhaps more worrying is the traditional competitor who breaks ranks and transforms itself into a new form of competitor, combining digital disruptive approaches with scale and a trusted brand.

Regardless of where the threat comes from, asset managers should review their vulnerabilities across their business, including the core investment engine. The digital revolution won't just change part of their business; it will change all of it. But digital isn't just about threats—it's also about opportunity. This opportunity could involve solutions to challenges that are themselves a product of the digital age, or solutions to those challenges that are being driven by entirely different factors. Either way, the trick for asset managers is to decide how to embed digital tools into their toolbox, and define exactly how bionic they want to become.

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Oliver Wyman is a global leader in management consulting that combines deep industry knowledge with specialised expertise in strategy, operations, risk management, and organisation transformation.

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