Reaping the Benefits of Disruptive Technology

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A joint survey conducted by Eagle Investment Systems and Hegarty Group specifically identifies how asset managers are deploying emerging technologies. The bigger question for many, also addressed, is how organizations can take the necessary steps today to access the impending wave of innovation.

Nothing stirs the imagination quite like the hopes and fears that accompany new, disruptive technologies. If observers believed every headline, though, they'd be preparing for a not-too-distant future without human accountants (courtesy of artificial intelligence (AI), machine learning (ML) and robotics process automation (RPA)) or even fiat money (given the rise of cryptocurrencies and blockchain). Yet, as awareness grows, hope typically turns to action and even the most acute fears fade as practitioners recognize both the challenge of adopting new technologies and the complementary value they can have on day-to-day operations.

Gartner's "hype cycle" perfectly captures the vacillating emotions, as new technologies progress from early proofs of concept and inflated expectations to a "trough of disillusionment" and finally, a better understanding around commercial viability. While Gartner has assessed that new advances, such as deep learning reside at the peak of the 2018 hype cycle, the consultancy has also estimated that within two to five years these technologies could have broader market applicability.

To be sure, the most advanced buy-side investment firms are already applying many of the disruptive innovations that Gartner has highlighted in the past. Machine learning, for instance, is offering a distinct advantage to those who have incorporated it into their trading operations to reduce costs, improve order flow, and optimize the market impact of their trades. While this is just one example, the advantages obtained underscores why Gartner warns that the risk of ignoring these and other AI technologies transcends any potential challenges.

Most buy-side operating professionals have a very realistic view of how disruptive technologies can help their business. A survey conducted at Eagle's ENGAGE18 conference in April, for instance, highlighted that the overriding objectives around digital transformation—and the technologies facilitating it—were to either reduce the complexity and cost of technology, gain more value out of data, or improve the end- customer experience. Fewer than one out of every ten, meanwhile, view digital transformation as an initiative that will change the underlying business model.
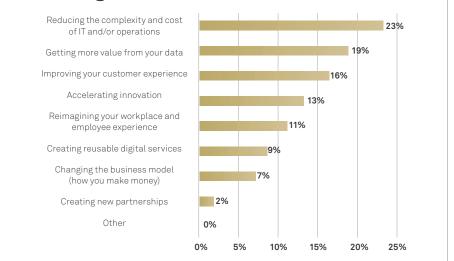
The survey revealed that while technologies such as AI, ML, RPA and the use of alternative data continue to generate considerable hype, many organizations are either already finding applications for these innovations or are engaged in efforts to clear a path so they can do so in the future. The biggest obstacle for many remains the ability to access clean and centralized data. But once organizations can address this issue, cloud technology coupled with a robust API framework can very quickly open up multiple ecosystems that make disruptive solutions available and provide a competitive advantage for years to come.

What follows is a recap of the ENGAGE18 survey that identifies not only which emerging technologies are gaining wider adoption, but also how asset managers and institutional investors are using these innovations within their back- and middle-office. Leveraging the experience of Eagle's engineering team as well as experts at fintech consultancy Hegarty Group, the following also seeks to provide some context around the challenges and opportunities as asset managers map out a strategy to incorporate emerging technologies, from AI and ML to RPA, into their business. Like everything in technology, it all begins with the data.

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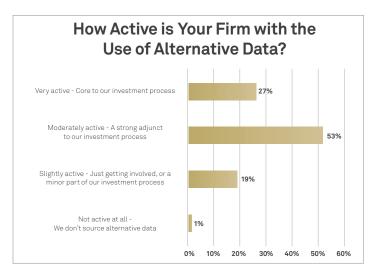
What Are the Most Important Goals for Your Digital Business Transformation?

Goal	Percentage
Reducing the complexity and cost of IT and/or operations	23%
Getting more value from your data	19%
Improving your customer experience	16%
Accelerating innovation	13%
Reimagining your workplace and employee experience	11%
Creating reusable digital services	9%
Changing the business model (how you make money)	7%
Creating new partnerships	2%
Other	0%

Alternative Data

From the perspective of the front office and investment teams, alternative data is among the innovations offering the most promise, at least in terms of providing an investment edge. Defined as "any non-financial data set that can be used as an input in quantitative decision making," among the earliest cited use cases are the pioneering hedge funds that leverage satellite imagery of retailer parking lots to gain early same- store sales insights.

Interestingly, out of the sample of approximately 100 buy-side firms polled, a nearly unanimous 99% of respondents said their organization is already using alternative data in some form. This speaks to the almost limitless potential of being able to harness big data to uncover insights others can't see—be it through scraping social media for sentiment analysis or utilizing mobile phones' geolocation data to identify consumer trends. The adoption levels also highlight the role of the corner office and investment teams in prioritizing the new technologies that can provide a differentiated capability.

How Active is Your Firm with the Use of Alternative Data?

Very active - Core to our investment process	27%
Moderately active - A strong adjunct to our investment process	53%
Slightly active - Just getting involved, or a minor part of our investment process	19%
Not active at all - We don't source alternative data	1%

The majority of respondents (53%) considered their organization to be "moderately active" in using alternative data and view it as a strong component to the firm's investment process. Underscoring the competitive dynamic, more than a quarter (26%), view it as "core" to their investment process and claim to be "very active" users, whereas fewer than one out of five (19%) said their organization currently sees it as a minor part of their process or are just getting started with alternative data.

What shouldn't be overlooked is the critical role of the cloud to support growing data volumes. Moreover, the attention given to alternative data from the front office provides a catalyst that will motivate buy-side firms to embrace the extensibility and elasticity of the public cloud. Many buy-side organizations, for instance, are rethinking their approach to storing data, moving from a traditional data warehouse to cloud-based data lakes to remove the technological hurdles that have traditionally stood in the way of using unstructured data more creatively.
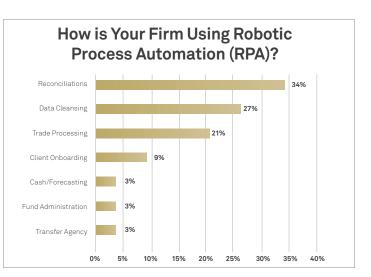
Based on the survey, it's clear investment firms view the adoption of alternative data capabilities as something of an arms race. Over time, however, these capabilities are likely to become commoditized and differentiation will be found in how well organizations can use disparate data sets through embracing the cloud and leveraging well-defined sets of APIs.

Robotic Process Automation

The financial services sector, in recent years, has been considered a laggard on the technology change curve since the financial crisis of 2008. This perception has only become more acute as a lack of capital, increased regulation, and margin compression collectively put a crimp on tech spending. The use of RPA, however, represents a notable exception. In fact, COOs at large global investment firms have been among the most ardent users of bots to keep static or minimize the back-office and IT footprint as AUM grows, regulatory demands increase, and rote tasks multiply.

The deployment of bots within an organization already seems quite ubiquitous, fulfilling everything from reconciliations and data cleansing to client onboarding and fund administration. But the enthusiasm for RPA extends beyond just the efficiencies gained or the technology's effectiveness in eliminating manual errors. In many ways, the growing RPA adoption—gravitating toward data-cleansing functions—can clear a path for organizations to apply AI or ML capabilities in the future.

The survey supports that the three most common roles for RPA among the buy-side firms polled include reconciliations (34%), data cleansing (26%) and trade processing (20%). To the extent that RPA can help organizations improve data hygiene—one of the most commonly cited impediments to AI deployment—it will facilitate more advanced cognitive capabilities that demand pristine data to be effective. But from a governance perspective alone, as buy-side firms recognize the importance of clean data, RPA usage should only grow.

How is Your Firm Using Robotic Process Automation (RPA)?

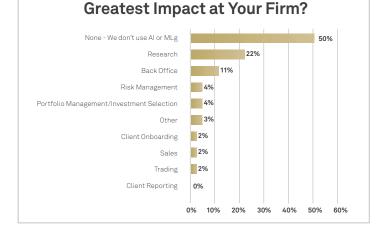|	
Reconciliations	34%
Data Cleansing	27%
Trade Processing	21%
Client Onboarding	9%
Cash/Forecasting	3%
Fund Administration	3%
Transfer Agency	3%

The nuance that many of the early adopters are coping with is that the application of RPA capabilities typically sits between the IT teams and business units. As back-office functions look to automate "swivel chair" activities, such as fax entries, or eliminate bottlenecks through adding RPA capabilities, organizations have to be careful to avoid robotic sprawl. To some, it's reminiscent of what can happen when Excel permeates across an organization until it becomes a permanent, if fragile, crutch. The dependency may seem fine until a macro breaks or gets stuck in a permanent loop. Data cleansing, however, is a function that lends itself to RPA and, ultimately, where the technology is most effective.

AI and Machine Learning

While alternative data and RPA certainly have the potential to alter the buy-side's operational and investment models, AI and ML could be the most disruptive for the industry at large. It is also the most dependent on pristine data, which in part explains the slower uptake among global investment firms. AI, in this context, refers to applications and computer systems that simulate human judgment and decision-making processes. ML, in contrast, refers to software applications that become more accurate at predicting and assessing outcomes through algorithms that can receive input data and use statistical analysis to predict an output, while also updating outputs as new data becomes available.

The number of respondents whose organizations have so far deployed either AI capabilities or ML was split down the middle. That 50% aren't using any AI in any capacity probably surprises most industry observers, particularly given that these technologies on or are approaching the "peak of inflated expectations" on Gartner's hype cycle. That said, the relatively slower adoption rate underscores the role and importance of clean and validated data to effectuate these capabilities and manage potential risks. Digital natives, for instance, will probably recall some of the early PR nightmares involving chatbots that went rogue on social media.

Where is AI/ML Having the Greatest Impact at Your Firm?

The 50% of respondents who are deploying AI and ML, however, have found a variety of functions for the technology, ranging from research, risk management, trading and investment selection to back-office functions, client onboarding, and even sales. What wasn't surprising was the fact that most of the early adopters leaned toward portfolio management functions for their AI and ML utilities. This again relates back to where the demand for these capabilities emanates from (investment teams) and how technology dollars are being prioritized in a competitive and unforgiving market for active managers.

Indeed, nearly a quarter of respondents (22%) said that AI and ML are having the biggest impact on their organization's research function, while 10% of respondents pointed to either investment selection, risk management, or trading as the specific area most affected. Anecdotally, the most forward-looking investment firms –typically larger, quantitative hedge funds –are already using AI to develop new investment strategies, enable portfolio replication, or to manage corporate actions. And while AI can offer deeper investment insights, an equally compelling opportunity is in driving operational alpha. Back-office functions were cited by 11% of respondents as the area most affected by these capabilities.
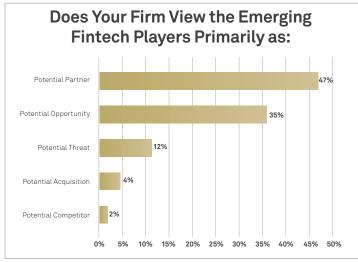
Amplifying the boundary-straddling effect of RPA capabilities within organizations, AI is reinforcing the need for buy-side firms to rethink traditional operating models altogether. Anecdotally, the front-office demand for AI and ML is breaking down traditional silos. Whereas IT and data management teams were previously insulated from the investment process, budding portfolio-manager interest in the technology is spurring greater collaboration. Data specialists, as a result, are now working directly with investment teams to augment selection and risk management without corrupting these processes.

While AI and ML will help portfolio managers expand and make sense of a far larger investment universe, from an operational perspective these capabilities are just as groundbreaking. AI and ML will unlock improvements in data quality that will have a synergistic effect for the entire organization. Similar to how investment teams are leveraging these capabilities, AI will also help back-office professionals tap into operational data sets to uncover deeper, more dynamic insights that improve workflows and add material efficiencies. And like "quantamental" investment philosophies that marry data science with human judgment, it is likely that back-office machine learning utilities will be integrated into existing processes. This will facilitate new approaches that adhere to the Pareto Principle in which 80% of the data runs through ML algorithms, while hand-carved rules account for the remaining 20% and drive operational alpha. As a result, human judgment will remain a critical differentiator.

Certainly, human judgment will remain a critical differentiator. AI and ML capabilities remain at the cutting-edge of technology, a healthy flow of open-sourced AI projects is currently in development. And unlike past tech-driven inflection points, innovation around AI is far less U.S. centric, emanating just as rapidly out of China, Europe and Japan. Data science, as a result, is quickly becoming a core competency as investment firms look to redefine their unique edge within the market.

Exponential Ecosystems

The collaboration needed to succeed will also extend far beyond each individual firm. Notably, nearly half of the survey respondents (47%) said their organization views emerging FinTech operators as potential partners, and over a third (36%) see them as an opportunity. This contrasts sharply with the 11% that see FinTech firms as a threat and the 2% that view them as a direct competitor.

Does Your Firm View the Emerging Fintech Players Primarily as:

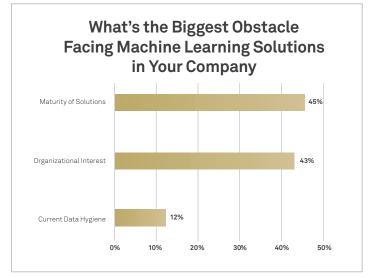| Category	Percentage
Potential Partner	47%
Potential Opportunity	35%
Potential Threat	12%
Potential Acquisition	4%
Potential Competitor	2%

It also reflects a revolution in the buy-side's approach to technology. Ten years ago, investment firms would spend millions to implement proprietary, closed-end systems based on the assumption it would deliver a technological advantage. In hindsight, these systems were costly to maintain, required significant workarounds to accommodate changes in strategy or regulations, and were incompatible with other third-party solutions that offered new capabilities or better functionality.

The fact more than eight out of every ten respondents see FinTech firms as an opportunity or partner speaks to the step-function shift toward open platforms in which collaboration between clients and vendors breaks down traditional competitive boundaries. Researchers at MIT's Center for Information Systems Research have identified four potential pathways as companies embrace digitalization in building their next generation enterprise. MIT cited the ecosystem drivers, who will become a destination for consumers and suppliers alike in their given space (think Amazon); the suppliers who will sell through other enterprises; the omnichannel companies who own the customer relationship; and the modular producers, offering plug-and-play solutions.

Buy-side firms of tomorrow will most likely gravitate to the omnichannel model to meet clients' dynamic usage patterns, while tapping into a vendor universe comprised of modular producers. The latter will be able to adapt to any ecosystem, while continually innovating their products and services to remain competitive. It's in this overlapping ecosystem that a robust and well rounded API framework will allow buy-side organizations to seamlessly leverage new technology and take advantage of best-in-class solutions that their own clients demand.

Ultimately, having modular systems within an API framework will allow firms to take advantage of best-in-class solutions. Even if as a fully-integrated, all-inclusive approach may seem easier today, this "contained" or closed model will preclude operators from leveraging new disruptive technologies as they emerge.

The Obstacles

The biggest draw of the incoming technology wave will be the relative ease with which organizations are able to access and deploy new capabilities—innovations that drive back-office efficiencies and investment performance. The caveat, however, is that the required groundwork can be significant. Based on the survey, the three biggest obstacles that stand in the way of adopting disruptive technologies are the current maturity of solutions, broader organizational interest, and current data hygiene.

What's the Biggest Obstacle Facing Machine Learning Solutions in Your Company

Category	Percentage
Maturity of Solutions	45%
Organizational Interest	43%
Current Data Hygiene	12%

In many ways, the first two obstacles are related. With limited organizational interest, awareness around how these technologies can help buy-side firm remains limited. Innovations such as machine learning remain at the peak of the hype cycle because a misperception still exists that current offerings can't solve the problems of established financial firms. As the survey demonstrated, however, many of these advances already have broad market applicability, even if they're only being deployed in discrete areas of the organization.

Another factor to consider is that as part of the groundwork, there also needs to be an injection of technology talent into the organization, while accommodations are made to the operating model to allow for more collaboration. As money and new investments are directed toward front-office technology and shadow IT, these efforts won't be scalable without the people or processes to leverage the investment.

The Path Forward

The most daunting challenge is the need for buy-side firms to address current data hygiene. This entails a centralized, next- generation data platform that can deliver defendable and auditable fit-for-purpose data across a global enterprise. A data governance program is also essential, particularly as the front-office data needs can differ from what's required for back-office functions. From a cultural perspective alone, it speaks to an organizational commitment to regard data as a true business asset. More importantly, data governance provides the foundation for the kind of back-office-transformations that can meet the voluminous but strict data demands of AI and ML technologies.

The pace of innovation today will only accelerate in the years ahead. To continually leverage these advances as AI and other new capabilities evolve, buy-side firms simply must embrace the extensibility of the cloud. In addition to the requisite computing power to manage and process big data, the continual software delivery of cloud native platforms will drive improved quality and system resiliency, seamless software upgrades, and faster technology adoption. This is why many of the more progressive asset managers are already embracing cloud computing and the public cloud is gaining considerable momentum as an enabling factor fueling transformation efforts.

Along these same lines, an extensive API framework will provide avenues into multiple technology ecosystems, while service abstraction design principles allow critical business services to move out of a single-data center environments to be absorbed by a set of providers and SaaS capabilities. The transition over time to a composable business paradigm will allow firms to co-create with vendors to tailor new, business-led applications and will enable a plug-and-play accessibility that opens the organization up to the rapid innovation occurring across an expansive and growing FinTech universe.

The findings of the survey underscore that while there is still significant hype around disruptive technologies, the expanding set of viable use cases heightens the urgency for buy-side firms to address the obstacles that will stand in the way in the future.

Methodology:

The survey was conducted during Eagle's ENGAGE18 client conference, polling approximately 100 respondents representing senior technology executives at global buy-side investment firms.

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Rob Hegarty is Managing Partner and Founder of Hegarty Group, a strategic research, advisory and consulting firm at the intersection of Financial Markets, Technology and Data. Hegarty Group helps large established firms, well-funded startups, and companies in between that are looking for expert, trusted advice with objective and informed strategic insights to help drive their firm's growth.

Prior to founding Hegarty Group, Rob was President of Olmstead Associates, a specialized consulting firm to the investment management industry. Before that, he was Global Head of Equities for Thomson Reuters where he had overall responsibility for Thomson Reuters' $1.2 billion global equities business, including all Equities desktop, transactions, data feeds, software platform and analytics businesses, as well as leading Thomson Reuters' Market Structure efforts. Rob has also held senior leadership positions at the Depository Trust and Clearing Corporation (DTCC), TowerGroup, Putnam Investments, Fidelity Investments, and Coopers & Lybrand. Rob also serves on the boards of public and private companies, and many industry boards.

Rob is a globally recognized thought leader in financial services technology. He has been a featured speaker at dozens of industry conferences globally, been quoted hundreds of times in leading publications including the Wall Street Journal, Financial Times, and New York Times. He has also appeared regularly on CNBC-TV (U.S. and Europe), ABC-TV and other broadcast outlets. He holds an M.B.A. with a finance/marketing concentration from Babson College and a B.S. in computer science from North Adams State College.

Steve Taylor
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As Chief Technology Officer of Eagle Investment Systems, Steve Taylor drives the software, technology and architecture decisions across Eagle's investment management suite and the Eagle ACCESS[SM] cloud platform. This strategic guidance ensures that development directly supports the firm's corporate vision.

An experienced, driven technologist with 20 years' experience and success in product management, strategy, engineering and architecture, Mr. Taylor has built highly effective teams in the financial services industry across a number of different disciplines, cultures and geographies.

Mr. Taylor joined Eagle in 2002 with responsibilities for technical services, custom development and integration capabilities for Eagle's European clients. In 2005, he transitioned to the US heading up the Enterprise engineering teams and then taking responsibility for the technology and architecture direction of the Eagle platform. Over his 14 years at Eagle, Mr. Taylor has helped transform the Eagle technology platform to support a cloud strategy and meet the scalability, security and resiliency requirements of Eagle's global client base.

Prior to joining Eagle, Mr. Taylor worked at several software houses in London and Europe designing and developing data management, performance and reporting solutions for asset managers.

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