Asset and Wealth Management in the IR4.0 Era

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ABSTRACT

Artificial Intelligence (AI) is a highly-evolved area of computer science that strives to create intelligent machines that can replicate certain human behaviour without its irrationalities for better predictability and consistency. Similarly, blockchain technology also has the potential to both enrich and improve financial processes and asset management systems, and progressive corporations have invested and devoted resources to utilize and incorporate blockchain into their businesses. In this conceptual paper, we provide a short discussion of AI and blockchain applications in asset management, understand the benefits and the shift in processes, as well as the challenges that need to be overcome for the practical applications for AI and blockchain and how to approach such innovations.We demonstrate the right use of each technology to bring out their benefits when applied appropriately and to understand the relationships of dated hypotheses with respect to real-world data, including historical data against forward-looking market data and their impact on improved projections. We also discuss improvements for client onboarding processes, construction and management of portfolios, personalization of services, clearing and settlements of trades and on the overall reporting for compliance.

Keywords: chatbots, portfolio management, robo-advisory, trade settlement

Introduction

In the last 60 years, the field of artificial intelligence (AI) has experienced curious interest, but in the last five years, it has gained explosive growth in that governments around the world are competing to create superior AI facilities and research with a view to AI being a lever for greater economic power and influence. According to the Wuzhen Institute Report (2017), "5,154 AI start-ups have been established globally during the past five years, representing a 175% increase relative to the previous

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12 years". The two reasons for this upshot are the "exponential advances in computing power have led to declining processing and data storage costs" and the "immense data availability has increased, creating more possibilities in the AI field".

Historically, the "US has dominated the AI industry, with 3,033 AI start-ups between 2000 and 2016, accounting for 37.41% of the worldwide total" (Buchanan, 2019). "Between 2012 and 2016, the US invested US$18.2 billion into AI compared with US$2.6 billion in China and US$850 million in the UK."[1] However, the "proportion has been decreasing and in 2016 dropped to under 30% for the first time. During the same period, the US received US$20.7 billion in funding, accounting for 71.78% of the world's total funding" (Wuzhen Institute Report, 2017). In 2017, China surpassed the US for the first time in terms of AI start-up funding (CB Insights, 2018). "In 2012, China accounted for 48% of global AI start-up funding and in 2017 the total global AI funding was $15.2 billion. AI equity deals increased 141% relative to the previous year and since 2016 more than 1,100 new AI companies have raised their first round of equity financing. However, the US global AI equity deal share has fallen significantly, from 77% to 50% during the last five years" (CB Insights, 2018).

China leads the Asian market in terms of AI growth. During the past five years, China accounted for 68.67 per cent of Asian AI start-ups, dominating with 60.22 per cent of the corresponding total Asian AI funding.

With the help of AI, blockchain not only benefits wealth managers but also works on making returns for their clients. In turn, the AI is fed with more data and updates the system's decision process automatically. This natural evolution helps the AI to be more sophisticated, and a more sophisticated AI is more efficient. The innovation of technology and the susceptibility to work in harmony with AI will also improve machine to machine interactions. These machines were made to facilitate human actions; thus, clustering computer systems together will make processes quicker and simplify complex processes. In fact, the Japanese Government Pension Investment Fund (reportedly manages one of the biggest retirement savings fund) is contemplating using AI to assist in managing their fund. According to Markets and Markets Research, the Digital Asset Management market is projected to grow from US$ 2.44 billion in 2017 to US$ 5.66 billion by 2022, at an expected CAGR of 18.3%[2]. The continuous developments in new technologies, such as integration of

[1]"Britain Urged to Take Ethical Advantage in Artificial Intelligence," John Thornhill, Financial Times. 16 April 2018. Available at: https://www.ft.com/content/b21d1fb8-3f3e-11e8-b9f9-de94fa33a81e

[2]https://www.marketsandmarkets.com/Market-Reports/digital-asset-management-market-96538567.html

cloud and mobility, analytics, and the emergence of IoT have further propelled asset management service providers to offer advanced solutions to improve asset productivity in a cost-efficient manner.

Objective

The objective of this paper is to analyse the possibilities for AI and blockchain applications to the asset management industry. We discuss the possible use cases of these technologies that may be utilized to overcome issues afflicting asset and portfolio management services. The integration of blockchain and AI into a decentralized intelligence system has profound possibilities to employ data in innovative ways. An effective amalgamation of both technologies will enable faster and seamless data management, validation of transactions, and detection of illegal documents, amongst others. For the asset and wealth management industry, blockchain will simplify transaction-tracking and reduce costs, as well as produce novel asset structures that can possibly maximize returns to the investor. AI has the ability to update and optimize investment strategies by diligently digesting new market data and consequently using them as inputs to project returns and risks for much attuned advisory and customer-centric service.

In this paper, the identified AI applications for asset management are personalization of services, portfolio management, chatbots and robo-advisory and financial prediction. The blockchain applications related to asset management are in the client onboarding process, management of model portfolios, trade clearing and settlement. They are assessed separately and broken down by their nature and projected impact, consequences and possible adoption in terms of cost-benefit, feasibility and regulatory compliance.

Literature Review

Background Theory

The term AI was coined in 1955 by the American computer scientist John McCarthy, based on the idea that "every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it" (McCarthy et al, 1955). "Other terms – like machine learning (ML), smart automation, cognitive computing, self-service analytics – are all closely related to AI. Within the financial services industry, AI applications include algorithmic trading, portfolio composition and optimization, model validation, back testing, robo-advising, virtual customer assistants, market impact analysis, regulatory compliance and stress testing".

In the late 1980s, IBM and Apple desktop computers rose to significance but specialized expert systems became more costly to support. While probabilistic reasoning models dominated the 1960s and 1970s, Bayesian networks gained more acceptance by combining classical AI and neural nets which allowed for learning from experience (Buchanan, 2019). In the 2000s and 2010s, the development of machine learning, deep learning technology, bots and intelligent agents on a powerful cloud computing platform ushered in a new era of computing.

Many blockchain experts believe that "distributed ledgers are highly flexible; once implemented, they can be used to remove friction from the client onboarding process, streamline management of model portfolios, speed the clearing and settlement of trades, and ease compliance burdens associated with Anti-Money Laundering (AML) and KYC" (EY, 2017). Blockchain applications bring efficiencies in eliminating redundant functions, reducing operational expenses and increasing client ease-of-use experience. They may be used to reconcile information across current legacy systems, and subsequently enable new infrastructure for potentially new markets and novel products.

Previous Studies

There is very limited literature on digitalized asset and portfolio management as it is still emergent and considered a specialized area in investment management that requires the next-generation cloud-based infrastructure to be developed first. Beketov, Lehmann and Wittke (2019) noted that in the robo-advisory segment, the core portfolio optimization and asset allocation methods applied within such systems were little known. They analyzed 219 existing robo-advisors worldwide and found that Modern Portfolio Theory remains the main framework used in them. They also noticed that the "current trend is to improve and augment this framework rather than applying and developing entirely new approaches" and that "the AuM [assets under management] volumes tend to be higher for the systems applying newer and more sophisticated methods".

Elizabeth Keathley (2014) in her *Digital Asset Management: Content Architectures, Project Management, and Creating Order out of Media Chaos* examined digital asset management and the challenges presented by the management of visual assets, user rights, and branded materials. She suggested ways to those who find themselves in the "bewildering position of formulating access control lists, auditing metadata, and consolidating information silos" into identifiable strategies for effective digital asset management. Other research on digital asset management appear to be outmoded as they were done prior to the existence of the blockchain in 2008,
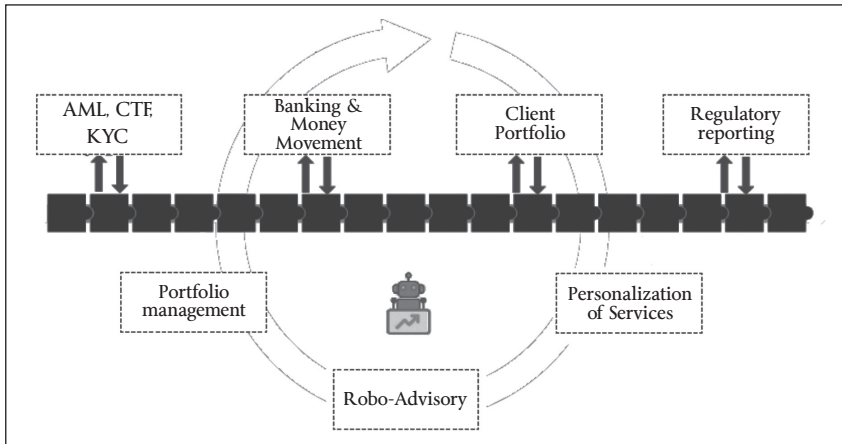
Figure 1
Integration of AI and Blockchain in Asset and Wealth Management

and hence may not be updated on the recent conceptualizations of what is possible today.

Furthering the contribution to the scarce research on digital asset management, we have directed our research to AI and blockchain applications as they propose obvious improvements to traditional processes, and offer quick wins for those innovators who wish to venture first into greenfield opportunities. However, first-movers need to carefully choose the right innovation that can be implemented immediately as opposed to areas which may require heavy investment in infrastructure as a pre-requisite to obtain its maximum benefit, but whose payoffs only happen much later.

Conceptual Framework

For the purpose of discussion, the various applications for blockchain are depicted on the applications described in the top row of Figure 1. The AI applications are depicted in the bottom row. Both technologies will complement each other in achieving the full potential of the digitalization of the asset management industry.

Methodology

This is a conceptual paper that investigates and proposes various use cases for the application of AI and blockchain to support the range of fund structures and the essential underlying services associated with the fund manager as well as the investor. Our discussion intends to demonstrate the right use of each technology to bring out its benefits when applied appropriately and to understand the relationships of dated hypotheses and historical data with respect to forward-looking market data, their impact

on improved projections, on client onboarding processes, construction and management of portfolios and on the overall reporting for compliance.

Model Development

Since we are still in the nascent stages of AI and blockchain implementation in asset and portfolio management, this research applied an overview approach to first broadly assess the critical impact on specific use cases like personalization of services, and the evolving regulatory requirements as a result of digital transformation. We separated the different applications for AI and blockchain as each technology provides benefits to the asset management industry in different ways. It is important to know the strengths of the technologies we use to apply it in appropriate ways. Not being able to do so will incur unnecessary costs and waste in resources and time invested in innovation projects which may not lead to intended outcomes. Our approach provides an introductory appreciation of the different aspects of how digital transformation can modify certain limitations of traditional processes, and how the introduction of new advanced techniques via technology may impact the industry and broadly across the economy. This is particularly useful for regulatory authorities and fund managers who are adept at managing assets but unfamiliar with AI and blockchain applications.

Method of Assessment

In order to assess the AI and blockchain applications, their impact on portfolio construction, on operations of asset transactions and on the overall security of the banking and financial systems, we had to qualitatively trace the repercussions that would result from such transformation, with considerations to the current interactions with the existing assets, funding sources and electronic money movements. As such, we assess the digital transformation from the investors' perspective as well as from the service-providers'.

Results And Analysis

AI Applications in Asset Management

Although there are initial fears of AI taking over human activities, more awareness will shift these perceptions that AI harnesses humanity's collective knowledge and experiences to make better decisions and enrich communications across institutional or consumer omni-channels. For example, large firms like BlackRock, Deutsche Bank, UBS and Wells Fargo are already using AI engines to analyse consumer digital footprints[3] via their

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[3]**FinTech - How Exponential Technological Progress will affect Asset & Wealth Management** https://finlantern.com/fundforum/wp-content/uploads/2017/12/FACTSET_FinTech-how-exponential-technological-progress-will-affect-Wealth-Mana....pdf

online behaviours, to understand and subsequently predict the products and services most likely to be embraced and used.

Personalization of Services

With increasingly high levels of client expectations, the need for quick, secure and highly personalized solutions is vital (PwC, 2018). High-net-worth individuals (HNWIs) and wealth management clients have become accustomed to highly personalized services by their wealth managers, who do so through a support network of connected channels and integrated systems. Contextual insights from massive data analytics can be distributed to wealth managers to help them schedule their daily activities — engage clients in a timely manner, identify opportunities for them whilst all the time remaining compliant to regulations. Peers (2018) believes that this enables them to keep up with the "increasing speed, complexity and scale of the financial services industry". As such, they are still able to make every interaction personal and relevant, while "build long-term rapport and trust by confidently helping clients solve their most important financial challenges".

Some possible situations where Peers suggest that AI can help achieve these are:

• Attaining a holistic evaluation of the client's portfolio and using automated recommendations to advance engagement for further improvements. What can make this possible is through leveraging advanced machine learning algorithms that utilize client actions and behaviours from Customer Relationship Management (CRM) systems to better understand unspoken client sentiment whilst generating targeted engagements and relevant conversations across all the channels with full orchestration from these customer insights.

• Retrieving instantaneous client relationships status, preferences and needs through tools such as sentiments, market analyses and sector alerts will enable real-time solutions, and they can produce insights that help to assess timely opportunities for a wealth manager to give their clients a call or visit. Customized engagements delight clients with pertinent information that are relevant to them.

• AI-driven services for wealth management have the capacity to craft new business models, provide incredible insights and spin off value-added products and services through massive data that can inform decisions better and quickly. This generates quality advice at a much lower cost through an optimal combination of intelligence from data analytics from technology and human assessment.

Certain facets of client engagement within financial services that can increase client relations and meaningful exchange without escalating fees are:

• Chatbots are programmed to answer clients' FAQs (frequently asked questions), or direct them to appropriate channels like appointment bookings, or lead clients to the best resources for further assistance — be they to check portfolio status, find updates on order status or submissions, new financial reports and market events.

• Secure authentication bots that handle automated verification through reliable channels to conclude financial transactions.

• Transactional bots that answer simple queries and flag events to trigger alerts, such as when a transaction exceeds trigger limits, a deduction is due or when trading authorizations close.

Portfolio Management

Asset and wealth management firms are studying and testing prospective AI solutions to better their investment decisions through insights gleaned from mammon of historical data[4]. Digital asset management (like an investment portfolio) are ripe for automation through AI where copious amounts of data about the assets (like the historical performance of a particular fund and market movements) are already being monitored. "More and more investors are turning to advisory services augmented with robo-advisors for essential investment needs because of their convenience, ease of use, affordability and transparency. They can provide a range of advisory services, from personalized, automated, algorithm-based portfolio management to sophisticated tax strategies and risk management, all at a markedly lower cost than the traditional advisory model" (Peers, 2018). Applying cognitive technologies and AI to various advisory utilities across the industry value chains[5] by analyzing historical data, market patterns and market dependencies. While there have been debates like fundamental vs macro, and passive vs active investing in the past, it may be about AI enhancing (or replacing?) modern portfolio theory with drastically better projections.

Chatbots and Robo-Advisory

Robo-advisors and chatbots are "emerging across the financial services sector, helping consumers choose investments, banking products and insurance policies" (Buchanan, 2018). "A 'bot' is a software application created to automate certain tasks using AI technology" (Future Today Institute, 2017). "A robo-advisor is an

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[4] https://emerj.com/ai-sector-overviews/machine-learning-in-investment-management-and-asset-management/

[5] "Artificial intelligence: The Next Frontier for Investment Management Firms," Deloitte, 2019

algorithm based digital platform that offers automated financial advice or investment management services." Robo-advisors have the potential to lower costs and increase the quality and transparency of financial advice for consumers. Rohner and Uhl (2017) see robo-advisory services in three ways: "(1) access to and rebalancing of passive and rule-based investment strategies, (2) cost-efficient implementation of a diversified asset allocation", and (3) overcoming behavioural biases. They find that compared to traditional investment advice, robo-advisors can save costs of up to 4.4 per cent per year.

"Banks are also engaging chatbots to improve their self-service interfaces. The Bank of America has launched its AI chatbot Erica and it is available through voice or message chat on the bank's mobile app. Erica's AI engine also leverages analytics to assist in managing personal finance. JP Morgan has invested in COiN, which is an AI technology that reviews documents and extracts data in far less time than a human. COiN can review approximately 12,000 documents in a matter of seconds, whereas a human would spend more than 360,000 hours of work on the same documents" (Brummer and Yadav, 2019).

Investment in chatbots and conversational interfaces are quickly expanding both from venture investment and through corporate customer service budget. Such "chatbots have had to be built with robust natural language processing engines as well as reams of finance-specific customer interactions. Natural language processing is making it increasingly difficult for bank customers to tell whether they are talking to an AI interface or a human. Japan's three megabanks are using AI and robotics to streamline customer questions".[6] For example, the Mizuho Group has a conversational support bot that helps answer typical asset management questions and can even compile associated request documents.

Financial Prediction

Advances in technology have been the vanguard of financial services, especially if these solutions can provide strong and viable economic advantages to them. In portfolio management, AI and machine learning tools are being used to recognize new signals on price movements and to generate effective use of vast available data to improve market assessment and decision acumen than with current models. "The key task is to identify signals from data on which predictions relating to price level or volatility can be made, over various time horizons, to generate higher and uncorrelated returns" (FSB, 2017). Portfolio construction with probabilistic

(risk) calculations, stochastic modelling and scenario testing are some of the mathematical models (including option related calculations) that are computationally intensive. Technology again will provide that leap forward with "cloud computing streamlining existing infrastructure and at the same time enabling many new, previously unimaginable or unimplementable, applications. In addition to the currently available near-unlimited, on-demand cloud computing, recent progress in quantum computers could soon provide the next disruptive chapter in humanity's unbounded appetite for computational processing" (Buchanan, 2019).

Black swans or extreme events in financial markets have been impossible to predict or time, but historically most of the profits have been made or lost during these extreme events[7]. It is now possible to not depend on predictive analytics based on existing models and past events. Newer technologies, for example those that use forward-looking directional market risk forecasting instead of being limited to historical data, are beginning to be adopted by asset managers and other financial institutions globally. Concepts like the efficient market hypothesis (EMH) and portfolio diversification may still applicable, but these concepts will give birth to new ones as the financial data gets increasingly processed by

the improved algorithm types in the enhanced AI systems for better projections and predictions.

Blockchain Applications in Asset Management

Blockchain experts are sure that it can be used to develop client profiles more efficiently and reliably. "Storing client profile data on a blockchain allows for data points — profile data, behavioral preferences, wealth net worth, personal account information, social media profiles — to be shared as needed, with each individual block of data being stored securely, but permissioned for access by the individual (read, write, edit) as needed" (Ernst & Young, 2017).

Client Onboarding Process

In the current system, prospective patrons are required to show identification and residency documents, prove marital status, sources of wealth, pronounce business interests and official occupation (and even declare political ties in order to set up certain accounts) for financial transactions. Going through this process, financial institutions may take days or weeks to verify information and conduct due diligence with reliable accuracy. In such cases, the blockchain presents a strong use case for client onboarding in wealth management.

Utilizing the blockchain, it would enable profiles of customers to be stored on a blockchain/distributed ledger

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[7] http://mebfaber.com/2011/08/12/where-the-black-swans-hide-andthe-ten-best-days-myth

where assigned groups can be granted access to selected information or entire profile based on issuing cryptographic access keys. The system intrinsically embeds an audit trail for tracking any change along the chain of information blocks (hence the blockchain). As a result, processes requiring information-verification and fact-checking, such as those employed in AML or KYC, can be very much streamlined. In addition, blockchain technologies can be integrated into onboarding and "Automated Clearinghouse (ACH) and Automated Customer Account Transfer (ACAT) systems that traditionally take multiple days and involve manual processes using multiple systems and databases" (EY, 2017). The blockchain can also enhance transfers of assets between financial institutions with verified derivation of tracked changes.

Management of Model Portfolios

The propagation of open architecture investment offerings and the availability of third-party investment vehicles have presented significant hurdles for wealth managers. "Distributed ledger technology would allow portfolio managers to instantly communicate portfolio changes to all clients 'subscribed' to the model, as well as enable real-time views of individual account performance, drift outside of tolerances and cash flows" (EY, 2017). Also, smart contracts built on the blockchain would execute trade terms and conditions, including management

of fees to be paid by the sponsors, if programmed to take proprietary fees every time the model is used.

Currently, asset managers use legacy platforms operating on archaic data architectures which inhibits ease of distribution, interfacing and updating newer third-party models. In some cases, corporations may end up supporting redundant model management systems, and remain stuck in time-consuming processes and frustrating users. However, with the blockchain, investment EY notes that managers can create and maintain a model which "could be transmitted through a blockchain to various subscribed brokers where individual accounts can be invested according to the model". Other account-level constraints or restriction customizations can be implemented conveniently.

Trade Clearing and Settlement

The last few decades have seen the asset management industry grow remarkably in both size and complexity. The range of fund structures and coverage of underlying asset classes has expanded to meet the investor's demands for a distinct set of products. To service this global set of products, "the industry makes significant use of service companies that act as intermediaries between them and the clearing and settlement infrastructure, currently a complex network of brokers, custodian banks, stock transfer agents, regulators, and depositories" (BIS, 1997). A single

transfer can require multiple liaising transactions, and usually takes three days to settle, of which about 20% generate errors, which has to be corrected manually (Mohamed and Ali, 2019).

With a blockchain, two trading parties can read and write to a shared, trusted, and error-free platform.[8] "The transaction could be written in legal language as well as in computer code, so that the data exchange itself is the settlement" (BCG, 2016), which can be made to be visible to regulators where necessary. "The brokers (as agents of the buyer and seller) could trade on a larger blockchain to remove custodians as intermediaries, thereby reducing total transaction costs. Institutions issuing securities, such as corporations, cities and municipalities, could issue them directly onto the blockchain", thereby removing the need for share registry agents.

The "ability of blockchain distributed ledgers to replace intermediary centralized systems of record has attracted real interest in investment firms given the potential to cut cost, reduce delays, provide more timely and accurate data and enhance reporting accuracy".[9] The blockchain can have a deep bearing on the settlement of securities transactions and offer massive reduction in transactional costs leading to reduced charges for investors.

Regulatory Compliance

Blockchainized platforms can be used to address the administration and coordination of identity, privacy and security across millions of devices by making them autonomous. These decentralized platforms give integrated systems an identity, make and receive payments, enter into complex agreements and transact without an intermediary (Mohamed and Ali, 2019).

One way to help ease compliance burdens is to build and deploy identity management solutions using blockchain. A blockchain consists of a node and any transaction comprises a chain of blocks that have been accepted by the participating node through a consensus mechanism. One of the most important elements in the blockchain is the identity of a node, and once the node has been identified correctly, the entire transaction becomes trustworthy.

An identity management system based on verification cryptography can be built using AML, CTF, and KYC[10] requirements according to the country-

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[8]https://www.bcg.com/en-sea/publications/2016/blockchain-thinking-outside-the-blocks.aspx

[9]https://sokodirectory.com/2018/01/blockchain-and-its-impact-to-the-investment-industry/

[10]AML refers to anti-money laundering, CTF is counter-terrorism funding and KYC is know-your-client

specific regulations. The same is stored virtually and a part of this information is released to the counterparty at the time of transaction to suffice the counterparty's requirement. The entire solution is built on the distributed ledger where an enterprise is a node and the platforms developed by asset management companies provide a cryptographic code for each node based on AML, CTF, and KYC requirements.

Automated reporting, automated audits, and process streamlining are other benefits offered by such blockchainized platforms to address regulatory compliance, where technology is bridging the gap between regulators and the asset management industry.

Openness to Adoption and Regulations

While many technologists are able to grasp the decentralized ledger concept and the complex Bayesian algorithms, many business leaders are still fuzzy on how it can benefit their business in a profound way, or where it can disrupt current models for competitive advantage. Because blockchain applications may be complicated to understand, determining a good business strategy for using it becomes even more difficult.

Establishing an effective framework to identify real business value is critical especially when there are many potential blockchain opportunities. "Firms should focus on those use cases that have the greatest opportunity with

minimal risk, and use a framework to properly allocate time and resources" (EY, 2017). In the short-term, there are use cases that can be developed quickly to drive results to win support for long-term solutions that may be slow to show returns. In addition to creating blockchain-specific business solutions, blockchain should be seen as an enabling technology to improve business operations in the areas of data management through transparency and revenue-generating opportunities captured through ease of use.

Financial regulators are also exploring the use of AI for better monitoring of financial institutions. The UK Financial Conduct Authority (FCA) is examining "the possibility of making its handbook machine-readable and then fully machine-executable. This would mean that machines can interpret and implement the rules directly" (Citi, 2018). "The Division of Economic and Risk Analysis (DERA) at the SEC is exploring ML to extract actionable insights from massive datasets, helping examiners find cases of potential fraud or misconduct" (Baugess, 2017). "As institutions find algorithms that create uncorrelated profits or returns, there are concerns that these will be manipulated on a suitably wide scale that correlations actually increase, which will only become clear as such advanced technologies are actually adopted". More generally, "greater interconnectedness in the financial system may help to share risks and act

as a safety net to potential shocks or contagion effects" (FSB, 2017).

International regulators utilize "AI-supported analytical methods to recognize vulnerability patterns, scan lengthy reports or analyze incoming data" (Buchanan, 2018). The Deutsche Bundesbank is already using AI in its risk management area and uses Neural Networks (NN) to assess financial market soundness. The European MIFID II50 (which also came into effect in 2018) requires that "firms applying algorithmic models based on AI and ML should have a robust development plan in place. Firms need to ensure that potential risks are included at every stage of the process" (Wuermaling, 2018).

Conclusion

In the asset management industry, advanced AI technology supported by blockchain applications will help us automate existing processes and realize new revenue streams and business models. In the distributions space, we use AI + blockchain technology to help us predict customer journeys throughout the life cycle of their engagement with the company – from onboarding to redemption – and explore ways consumers can be better served by offering products better suited to their investment style at certain stages in their customer journey. On the product management front, AI + blockchain technology help our portfolio managers make the smartest possible investment decisions at a given point in time using sophisticated analytics. Other emerging technologies and approaches to be adopted in the financial space – such as Virtual Reality (VR) and integrating the Internet of Things (IoT) to create holistic solutions. ■

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