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STRATEGY NOTE

ROBO ADVISORS:

HOW AUTOMATED
ADVISORY SERVICES ARE
RESHAPING THE INVESTMENT
MANAGEMENT INDUSTRY



HIGHLIGHTS

- After having transformed numerous industries, **technological advancements** and innovation have reached the wealth management industry and are **promising a major overhaul of the way both wealth and client relationships are managed**
- **Robo Advisors are helping fill a significant gap by satisfying the unmet needs of smaller investors.** A segment that holds a significant portion of the global investable assets pool that was not economically feasible to pursue and didn't have the necessary means to invest efficiently using traditional venues
- **Automated advisory** models, which started as machine only models, **are morphing into hybrid models by re-introducing the human advisor element** in multiple forms across the product offering. **Machine-only models are becoming a commodity**
- **The investment management industry has always been at the forefront of technological innovation** and the current ongoing transformation, short of being disruptive in the strict sense of the word, is a continuation of a long running trend that is aimed at keeping the industry profitable and viable.
- Although the human element's involvement is bound to decline with the vast adoption of robo-advisory models, **the nature of the wealth management industry will always require human advisors and relationship managers to be available.**

INTRODUCTION

Technology has become embedded in almost every aspect of human life. Over the past few decades, the power of technological change has altered a multitude of conventional industries including music, video-renting, books, taxis, traditional newspapers, and retail businesses. It has radically transformed whole sectors of the economy. For example, the digitization of manufacturing processes have had a transformational impact on efficiency and production costs, and more significantly, it transformed the skillsets required to do certain jobs and the politics of jobs and employment in general. Technological advancements have also altered the geography of the supply chain and caused barriers to entry in many industries to collapse.

Recent advances in artificial intelligence, machine learning, and robotics are promising to take such disruptions to completely new levels. One of the major concerns of economists today are the developments in the labor markets resulting from robots taking over human workers' responsibilities in the production value chain.

While the largest employer of robots is still the car industry, automation and robotization is growing way beyond manufacturing. It is spreading into service sectors where the human element represented a key factor in the service delivery chain, especially on the relationship management side. One notably relevant area for this discussion is the financial industry. Even though technology is no stranger to this industry, it has so far been mainly prevalent in back-office and middle-office functions, such as core banking systems, trading and brokerage software, and operations among others. The new trend in wealth management is the automation of the client relationship experience through what has come to be known as robo-advisors. In this note we will introduce automated advisory services, explore the different business models that are currently employed, and try to understand how they would shape the investment management industry.

A BRIEF HISTORY OF TECHNOLOGY

It took more than a hundred years after the first industrial revolution for advancements in manufacturing processes to usher-in the second revolution, which arguably started in the early 20th century with Henry Ford's assembly lines and mass production.

The seeds of the so-called third revolution, i.e. the digitization of manufacturing processes, were sown only a few decades later when, in the 1970s, the earliest versions of the personal computer were introduced. Things progressed steadily from there, with companies like Apple and IBM introducing home friendly versions of the computer. The Personal Computer was born and Time Magazine dubbed 1982 the Year of the Computer. Its 1982 Person of the Year cover was replaced by the Computer, the Machine of the Year, ushering the dawn of the information age. In 1980, there were one million PCs in the United States. This number increased 10 fold to 10 million in 1983 and expanded exponentially thereafter. Computers

kept getting thinner, smaller, faster, smarter, more powerful, more affordable, and most importantly perhaps, more intermingled with our daily lives.

Fast-forward 35 years, technology-led transformation is altering everything around us. Computers have not only become smaller and cheaper, they have morphed and merged into almost everything we use on a daily basis including cars, phones, home appliances, and office equipment, to name just a few.

DISRUPTION? WHAT DISRUPTION?

The word “disruption” has probably become the most fashionable word in tech jargon over the past few years. As per the Oxford dictionary, to “disrupt” is to *“interrupt by causing a disturbance or problem or to drastically alter or destroy the structure of something”*.

Technology has indeed been disrupting some industries, driving some products into extinction, while radically transforming others. The basic human need, however, that is satisfied by the product or the service produced by such industries remains the same. Technology has merely made the production and delivery processes more efficient and the products and services more easily and conveniently available and adapted to a wider group of end-users. People are still reading and writing books. They are still communicating with each other, not as much through copper wires and fax machines though, and they are still following and reading the news.

Many industries are successfully adapting to change, admittedly some more easily than others, and this is chiefly because of their nature. The financial industry for one is probably among the most agile when it comes to change. The capital of the financial industry has always been its human capital as well as its digital infrastructure, and therefore staying on top of innovation as far as technology is concerned has always been critical to the financial industry. Commercial banks have successfully moved their platforms to the internet and then to mobile apps and cut down physical branches, while some are going completely branchless. Clients are now able to cover virtually all of their banking needs from anywhere without having to deal with a human bank teller.

In much the same way, technology has been at the core of the wealth management industry for years. Innovations, however, have been mostly on the internal operating framework such as investment management, market research, data analysis, trading algorithms, and machine trading. Over time, such innovations have made investment firms more efficient and less dependent on the human factor in most components of the investment management cycle. Wealth managers are now turning to automation to improve the experience of their existing clients and to extend their reach into new consumer segments.

In this context, disruption in financial services, and in wealth management in particular, is something that has been continuously shaping the industry ever since we entered the information age in the early eighties.

DRIVERS FOR AUTOMATION

During the financial crisis, and in the midst of a renewed debate over active versus passive investment management and high management fees associated with the former, automated advisory services, or robo-advisory, emerged as an alternative to traditional wealth management approaches.

Technological advancements, increased competition, challenging market conditions, and low interest rates were few of the additional factors that colluded to initiate a change in the wealth management industry. With the compression of management fees, firms needed to be more agile, more cost conscious, and above all, needed to minimize the cost of sourcing new AUMs and maintaining existing ones. A large part of automating the investment management cycle has already been underway for many years; client risk profiling uses automation to process questionnaire answers, modern asset allocation and security selection models use complex algorithms and optimizers to deal with large amounts of historical data and projections, and client reports can be generated with a click of a button.

Effectively the last piece of the cycle was the relationship and the interaction between the relationship manager and the client. This relationship has been traditionally managed by private bankers, investment advisors, and financial planners who, being human, have a limited capacity in terms of the size of client portfolios they can handle. This translated into prioritizing larger accounts with higher investable assets and practically ignoring a large, albeit fragmented, portion of the investable asset pool available. The advent of automated advisory models provided asset and wealth managers with a reasonable solution to deal with exactly that.

Wealth management firms are increasingly adapting their business models by integrating automated advisory services and capabilities into their platforms. This transformation helps increase scale without having to increase headcount due to less frequent interactions with clients. This will consequently enable wealth managers to move down the wealth scale and target smaller accounts that were previously uneconomical to pursue.

AUTOMATED ADVISORY BUSINESS MODELS

Advisory models variations move along two vectors. One is technology related and is a function of the complexity of the algorithms used to build the model and consequently the complexity of the services it is able to deliver. The other is the degree and form of involvement of a human advisor in the client experience.

In their most basic form, robo-advisors are simply software solutions and algorithms with which clients interact through a relatively simple questionnaire to determine their risk profile, investment objectives, and risk tolerance levels. Clients are then assigned a correspondingly suitable portfolio that is composed of passively managed investment instruments such as Exchange Traded Funds or ETFs.

The earliest models, such as the one introduced by Betterment in 2008, were based on investing passively in target-date mutual funds with minimal turnover which resulted from

periodical portfolio rebalancing. Robo-advisory models have evolved over the years, and the algorithms used to build them became increasingly complex and the services offered more sophisticated and more diverse while targeting a larger variety of client segments and needs.

In addition to target-based investing using traditional asset classes through ETFs, some models now have the ability to incorporate outside assets, handle individual securities, illiquid assets and alternatives, optimize for taxes through tax loss harvesting, and consider low tax holdings.

The other dimension to examine is the human involvement in the client experience. The basic models are designed to minimize or even eliminate the role of a human advisor altogether. Such models are usually targeted at smaller accounts that are expected to accumulate wealth over time through savings and a long-term investment horizon. This is a pool of assets that hasn't been traditionally targeted by wealth managers and is typically fragmented and composed of young professionals and millennials.

Other than some form of traditional customer support functions, in most basic digital-only models the client's experience is completely autonomous, starting with the self-profiling, all the way to implementation and rebalancing. This is a very cost-efficient model for both the client and the service provider. Such models are very scalable and are increasingly becoming a commodity in the wealth management industry.

Chart 1. Business Models of Automated Advisory Solutions



Source: NBK Capital

In the context of wealth management, however, the human element remains the cornerstone of trust for the relationship with the majority of clients. It follows that, even though many managers are investing in automated solutions, most of the basic digital-only models currently serve a certain level of AUMs. As the level of wealth increases, so does the needs of the investors and the complexity of the investment solutions needed. While digital-only remains the core of the system, a number of wealth manager using automated advisory services are re-introducing the human advisor to the formula in a gradual manner depending on the account size.

Above a certain account size, or for more expensive “Premium” accounts, clients would have access to a pool of advisors and financial planners. Such access could be either unlimited or subject to certain limitations such as a number of hours per year.

The next level is to have a dedicated advisor who acts as the relationship manager. The advisor in this model partly assumes the role of a traditional financial advisor with the added benefit of having the clients self-directing most of the components of the investment process. The advisor would be available to validate the results of the risk profiling and the resulting allocation and to address issues that are not clearly covered by the automated process. In this model the advisor’s involvement would be front-loaded and declines as the account matures and the client gets more familiar and more educated about the available investment tools.

Chart 2. Business Models Matrix

Product Differentiation	High	Traditional Models			High	Wealth Level
	Medium		Hybrid		Medium	
	Low			Digital Only	Low	
		Face-to-Face	Advisor-Assisted	Fully Automated		
		Business Model				

Source: NBK Capital

Many service providers started-off with the digital-only models to stay efficient and not bear the costs of a large team of advisors. With the increase in competition however, it was necessary to differentiate the service offering and some started moving towards a hybrid model and introducing a human advisor for accounts above a certain size. Some discount brokers and asset managers like Charles Schwab and Vanguard have the advisor as default but have relatively higher account minimums.

Vanguard’s Personal Advisor Service for example, has a hybrid system that offers a mix of digital and human advisors. With a minimum of \$50K all accounts have access to a human advisor from a pool of advisors, while accounts larger than \$500K have access to a dedicated advisor.

There is also the “robo-for-advisor” model, where the financial advisor uses the automated system as a tool in producing the output needed for the client thereby increasing the efficiency and the bandwidth of individual advisors to be able to handle a larger number of clients.

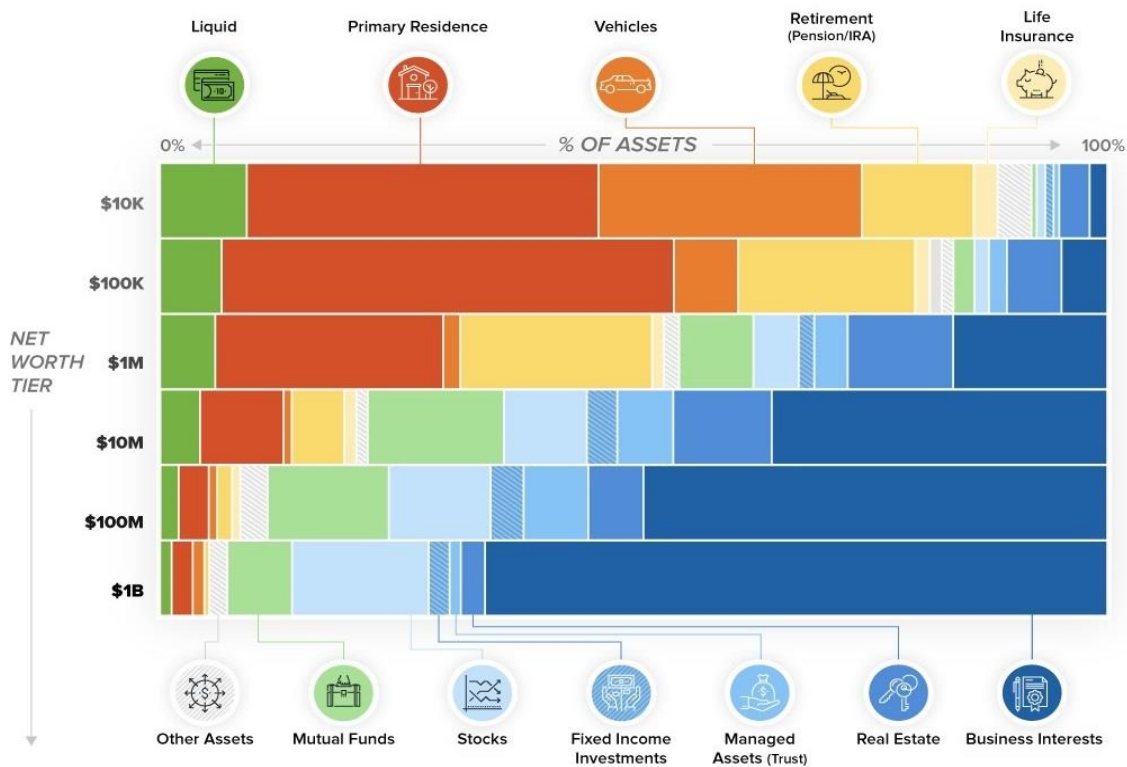
Another angle for differentiation is the target market. While most mainstream models are targeting young profession through target-based investing and pension planning, some industry players are approaching the retirement problem from a completely different angle. United Income, which launched its services in September 2017 and is backed by Morningstar and eBay billionaire Pierre Omidyar, is one example. Instead of going after millennials, who

are admittedly the most open to technology but have no significant funds to invest, it is targeting people who are either retired or just about to. Its main target market is people aged 50 to 70 and have already done the most part of the saving. Its objective is to help retirees optimize income disbursement from their retirement funds. The company uses big data to do that. It uses huge long-term data sets on investment performance, longevity, and spending patterns of retirees, among many others.

ANATOMY OF WEALTH

The chart below which was created by visualcapitalist.com, based on data from the Federal Reserve Survey of Consumer Finances, provides significant insight on the asset composition of wealth based on net worth tiers.

Chart 3. What Assets Make up Wealth – Asset Distributions Based on Net Worth Tiers



Categories are grouped based on log10 value of household net worth. This means all 5-figure households are grouped together (\$10K-\$99K), all 6-figure households are grouped together (\$100K-\$999K), and so on.

Source: Federal Reserve Survey of Consumer Finances (2016) and visualcapitalist.com

On the lower end of the wealth spectrum, below the \$1 million tier, the bulk of assets would be held in a primary residence and vehicles, while a much smaller percentage would be in investable assets such as retirement funds and some form of real estate investments. Mutual funds, direct stock holdings and retirement funds (pensions and IRAs) would start to

constitute a significant share beyond the \$1 million tier, whereas business interests and direct stock holdings take center stage for multi-millionaires.

We can argue that the basic models of automated advisory solutions would be generally more suited for individuals on the lower to mid tiers especially those who have no prior experience in the financial industry. These are mostly constituted of the mass affluent segment which were not economically feasible to pursue by traditional money managers. This segment would typically include professionals and young entrepreneurs that are expected to build wealth during their lifetime through savings and long term investments.

As we move higher on the wealth spectrum, individuals become increasingly involved and hands-on in their investment activities and would most likely have prior experience with investment advisors and private bankers.

MARKET EVOLUTION

Looking at most service providers in the market today, we can classify them into two major categories: the independent startups and those that are affiliated with existing wealth management firms and brokers.

Startups predominately started with a digital-only solution, which helped them capture a good share of the digital natives and millennials, a segment that was not on the radar screen of traditional wealth managers. This is the younger segment of the market that is comfortable with computers and digital solutions and wants to save and build investment assets over time rather than invest already existing assets.

Soon after, major players in the wealth management industry started to incorporate automated advisory solutions into their service offering. A major key to service differentiation was evidently the complexity and sophistication of the core system and the level of diversity in their product offering. More importantly, however, most service providers introduced hybrid models which include various levels of human intervention typically at higher fees.

The level of human involvement in an automated advisory system increases with the level of managed assets. This relationship, however, is far from being linear. The investment process is being presented as a learning experience for smaller investors with a multitude of service providers offering teaching aids and educational material for their clients as part of their services. The involvement of a human advisor, or an “investing coach” model such as the one offered by Vanguard’s Personal Advisor Services, would be practically more relevant during the first few years after onboarding a client. The level of such involvement would subsequently decline as clients gain investment experience.

Today, however, most providers seem to be settling on a hybrid model where a human advisor is introduced to the formula in some form. This involvement becomes more significant and more frequent for clients with higher assets and more complex investment requirements. The availability of a human advisor or an investing coach becomes even more important in times of market turbulence and increased uncertainty when sticking to the plan becomes more difficult.

THE HUMAN ELEMENT

The basic premise of an automated advisory solution is that investors would be offered investment portfolios that would fit their investment targets and risk tolerance levels. Such portfolios would be constructed using ETFs and similar securities and will essentially be passively managed. Clients will then either invest a lump sum, make periodic contributions, or some combination of the two over a long period of time to ultimately achieve their investment targets.

In this context, investors are assumed to be disciplined and that they will stick to the plan throughout the investment period. By definition, however, human behavior is not always rational and even experienced investors are sometimes prone to be emotionally driven in times of market turbulence.

One of the major advantages of automated advisory solutions is that they would contribute in instituting a disciplined approach to investing. They would also help reinforce the long term financial planning and saving mentality which a lot of people pay attention to only when it is too late. There will always be, however, a need for counseling and investment coaching especially in difficult market conditions. This is something that can be best achieved through a trusted professional human advisor. Investment advisors would be playing the role of a circuit-breaker whose task is to refocus the investors' attention on staying the course and on the original objective of the investment and away from short term market volatility.

Over time, advancement in artificial intelligence and machine learning will surely play a big role in further reducing the role of the human element in the investment management cycle. At the same time, the forces that are now creating commoditized mass produced investment solutions for each category of a "risk profile" spectrum will be able to move the robo advisory model into a machine capable of mass customization which would produce highly customized portfolio solutions that would each individual investors specific needs and circumstances.

One of the most formidable challenges, however, for the automated advisory solutions is incorporating high-ticket, illiquid investment instruments into their product offering. On the longer term, this has the potential of creating a dichotomy in the investment management industry. One side of the pool of investment instruments available would be democratized and made available to every investor through robo advisors, while the deep end would only be accessible by professional high net worth investors through hybrid models which incorporate both humans and machines to manage the relationship.

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