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Knowledge Management in
Asset Management

Eduard v. Gelderen, Ashby Monk

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Knowledge Management in Asset Management

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Abstract

The idea that superior knowledge is required to drive financial out-performance runs counter to some of the most pervasive theoretical frameworks used by investors today. The Efficient Market Hypothesis and the Capital Asset Pricing Model, for example, posit that capital markets are efficient and that no consistent outperformance can be generated without increasing risk. Active asset managers, however, argue differently and claim that skills and knowledge are critical for capturing excess returns. We agree. In fact, in this paper we argue that knowledge assets and the use of superior knowledge are crucial to the success of all asset managers and, in particular, active managers. And yet, despite its clear importance, very little is known about knowledge management in asset management. This article thus seeks to remedy this by offering insight into the role that

knowledge plays in the investment process and, more specifically, into the adoption of knowledge management by asset managers. The paper concludes with a roadmap that offers a way for investors to become knowledge and asset managers.

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INTRODUCTION

Asset management (AM) refers to the professional administration and investment of financial assets to achieve specified investment goals and objectives. On the surface, asset managers have a simple and attractive business: they take an initial stock of money – what we call financial capital – and put it to work through the application of human capital (i.e., people), market intelligence (i.e., research, technology, and networks), and governance (i.e., policies, processes, and procedures). When these three inputs are combined effectively with an initial stock of capital, asset managers can generate attractive investment returns for clients and, in turn, revenues for their business and employees. Generally speaking, then, a successful investment organization is one that is adept at employing talented individuals in operating environments constrained by policies, processes and procedures in order to identify and then exploit informational advantages in a timely manner. This may seem to be a simple formula for success, but it raises important and complex questions. For example, what are the factors that allow for investment organizations – be they for-profit asset managers, such as hedge funds, or beneficial investment organizations, such as endowments or pensions – to develop and mobilize the inputs listed above? And, in turn, once the inputs are mobilized, can these investors substantiate their value? It is in answering these questions that the business of AM becomes rather complicated. In our opinion, the creation, maintenance and exploitation of “knowledge” are critical to the success of any investment organization.

Since Coase’s (1937) paper on “the nature of the firm,” many theories have been developed to explain the core essence of firms and the large diversity among them. According to Kraaijenbrink and Spender (2011), at least twenty “theories of the firm” have been put forward, originating from different disciplinary perspectives, such as economic, organizational, and behavioral theories. These can be grouped into four buckets: 1) the firm as a bundle of assets; 2) the firm as a bundle of people; 3) the firm as a production system; and 4) the firm as an interest-alignment system. In order to differentiate further among the prevalent theories of the firm, we can also distinguish the different ways in which firms create value. Of particular interest to our work, Penrose (1959) argued that the ability to bring different intellectual resources together, as part of the production system, is the main driver behind a firm’s success. This early research resulted in the knowledge-based view of the firm, but it was not until Nonaka (1991) that the practical implications of this theory were recognized. Specifically, it became accepted that new knowledge, i.e., value, could be created by means of the continuous interaction between explicit and tacit knowledge. In this respect O’Leary (2002) talked about knowledge management as the organizational efforts to: 1) capture knowledge, 2) convert personal

knowledge to group-available knowledge, 3) connect people to people, people to knowledge, knowledge to people, and knowledge to knowledge, and 4) measure that knowledge to facilitate management of resources and to help understand its evolution. This is true for firms and investment organizations. For example, investment firms with good governance and an optimal set-up of rules and procedures are able to outperform [Moussavou (2006); Clark and Urwin (2008); Clark and Monk (2013; forthcoming)].²

As Nonaka and Takeuchi (1995) define it, knowledge is about forming beliefs and making commitments; it is about putting information and data into action. As this implies, knowledge also goes to the heart of investment decision-making. And, if we assume that active management is a zero-sum game (or at least close to it), superior knowledge would seem to be the only way to achieve excess investment returns. While this may seem an obvious observation, it is worth noting that this view actually runs counter to some of the dominant frameworks used by investors today [see Clark (2014)]. For example, the Efficient Market Hypothesis [Fama (1965)] and the Capital Asset Pricing Model [Treyner (1961); Sharpe (1964); Lintner (1965)] are based on the premise that capital markets are efficient and that no asset manager has superior knowledge over the broader market, believing that all possible information is reflected in current market prices and excess returns are simply a function of the level of risk taken.³ But, as you might expect, the community of active asset managers disagrees with these mainstream views, arguing that informational advantages do exist and that opportunities for generating excess returns can be identified in the market.⁴ This is a view that also seems to be in line with recent empirical research on factor investing. For example, Harvey et al. (2014) identified more than 300 factors that affect equity returns in empirical literature. However, gathering and leveraging those factors in the context of trading requires developing formal policies for knowledge management. More general research on organizational behavior also shows that all organizations, independent of industry, get value from knowledge management and that knowledge carries

2 Investment organizations with high employee ownership and low turnover underpin investment success [Finstad (2005)]. Even organizational size has been directly linked to investment performance [Beckers and Vaughan (2001); Pozen and Hamacher (2011)].

3 Ross’ (1976) Arbitrage Pricing Theory made these (pricing) models more profound by allowing the use of multiple risk factors rather than a single market factor. Several macroeconomic factors, as well as style factors, have been suggested in this respect [see Ang (2014)].

4 For example, Goldman Sachs Asset Management stated in one of their Perspectives: “There are many reasons to believe active portfolio management can effectively transform active risk into active returns. These are well documented in investment literature and include time-varying risk premiums, the tendency of investors to underreact and over-react to different types of information, the existence of investors with motives other than pure risk/return optimization, and a variety of frictions and pockets of illiquidity.” [Goldman Sachs Asset Management (2005)]

as much value as financial or even human capital [Grant (1996); Spender (1996)]. In short, the way an organization is structured will inevitably affect its ability to create, maintain, and use knowledge – and it is in the context of the organization’s design that knowledge ultimately drives performance.

Given the importance of superior knowledge in performance, you would be forgiven for assuming that knowledge management (KM) – or how human capital, market intelligence and governance is combined to get to grips with O’Leary’s approach – was a top priority of all active asset managers. Oddly, it is not. Most asset managers could not be described as knowledge managers at all. Many do not even use publicly available knowledge effectively [Huij and van Gelderen (2014), often relying on the tacit knowledge of an individual investor who is not willing to share his or her knowledge [Gertler (2002)]. In fact, very little is known about KM in AM. This article seeks to remedy this by providing insights into the adoption of KM by asset managers and, more specifically, to the role that knowledge can (and in certain cases does) play in shaping the investment process.

In order to develop our arguments, we adopt a multi-method approach grounded in proprietary expert surveys and elite interviews (as per Strauss and Corbin (1998); Denzin (1970)). Specifically, we delivered two surveys to investment professionals – first in the Netherlands and then in the U.S. In addition to the two surveys, we also interviewed a group of 20 asset managers between September 2012 and December 2015. We use these qualitative and quantitative results in order to develop a better understanding of the role that KM is playing, and can play in the future, in AM. The rest of the paper proceeds as follows: section 2 presents a theoretical KM framework related to investment processes. Section 3 discusses in more detail the methodologies used in this research. Section 4 offers a series of findings from the research, while section 5 provides a roadmap for how KM could be better integrated into AM. We conclude that, despite the knowledge intensive nature of the AM industry, many aspects of KM are still left implicit and not dealt with in a structural or strategic manner. A more visionary KM approach could still provide investors with a true competitive edge over peers.

ACTIVE AM IS KM

Leibowitz (2005) describes active AM as encompassing four steps: (1) ascertaining why a market is priced where it is; (2) understanding the basis for any mispricing of opportunities; (3) developing a view of the true market equilibrium; and (4) concluding that this

“discernment” will transpire within a relevant time span. Active AM thus demands an ability to identify, explain, and act on market inefficiencies and anomalies. As you can imagine, this demands considerable and often privileged knowledge of markets. As Grinold states (1989, p. 35): “The strongest assumption behind the law [of active management] is that the manager will gauge the value of information accurately and build portfolios that use that information in an optimal way. This requires insight, self-examination, and a skill level in the investment manager that may be rarely achieved, no matter how admirable the goal.”

The “law of active management” states that any added value from active AM (which, fittingly, is known as an “information ratio”) is calculated by multiplying the managers’ skill (the information coefficient) by the breadth of the investment opportunities [Grinold (1989)]. While the term “breadth” is clearly defined as the number of distinct, independent investment decisions possible over a certain time period, the term “skill” (or information coefficient) is not clarified other than the technical definition that the information coefficient is the correlation between ex-ante and ex-post performance. Common practice is to determine a manager’s skill using indirect and statistical methods applied to the manager’s historical performance record, despite its doubtful statistical significance [Harvey and Liu (2016)]. The idea behind this approach is that if a manager’s skill is the driver of excess returns, then the investment returns should differ from random (market) returns. However, the required number of data points is often lacking. A direct and forward-looking approach would be to link excess return to the collection of specific sets of data and information and the development and mobilization of unique and superior knowledge. Accordingly, we believe skilled active AM is tantamount to KM.

However, this then raises the question of what types of knowledge and skills are required to be a successful active asset manager. Knowledge in the case of AM means a deep understanding of the functioning of capital markets and its value drivers, which is a combination of two important factors: 1) explicit knowledge and 2) tacit knowledge:

- **Explicit knowledge:** is primarily gained by means of formal training. Professional training has been linked with performance by academic research. For example, De Franco and Zhou (2007) looked into the value of the CFA designation by comparing the performance of sell-side analysts with and without the CFA designation. They found that analysts with the CFA designation showed better performance. These results were confirmed by Fang and Wang (2015) with regards to stock picking skills in the Chinese capital markets. These results show that the CFA training is successful in providing market knowledge. Chaudhuri

(2013) also showed that managers with a high number of PhDs also provide superior performance. The explanation is found in the typical training PhDs receive in the analysis of complex problems. This result comes closer to our definition of superior knowledge; PhDs are trained to ask for the right information.

- **Tacit knowledge:** is earned over time through experience. Again, research shows that this experiential knowledge is also linked with performance. For example, Greenwood and Nagel (2006, 2008) found a clear positive difference in performance in favor of seasoned investors. Although the younger investors had gone through professional training, “inexperienced investors form their beliefs about future price changes by extrapolating past price trends from limited data” (p. 16). As a result, younger investors missed sharp changes in market sentiment and more frequently ended up in loss-making positions.

This combination of training and experience forms the basis of knowledge and, ultimately, skill. And skill, in Grinold’s statement at least, is the capacity to build optimal portfolios to exploit market inefficiencies and anomalies. Put differently, a skillful asset manager maintains and creates superior knowledge and knows how to apply that knowledge effectively.

Superior knowledge may, however, become obsolete over time. After all, market participants quickly become aware of how pioneers exploit market inefficiencies and anomalies and copy their approach. The result is that these investment opportunities are arbitrated away very quickly and no longer offer profitable strategies for active management [Ineichen (2004)]. Lo’s Adaptive Market Hypothesis (2004) touched on this as well by postulating that the drivers of markets change over time and new inefficiencies and anomalies inevitably emerge. Consequently, a skillful manager is also typified by the ability to act on changing market conditions by creating new superior knowledge and abandoning obsolete ones. The true impact of skills on investment performance, it turns out, is largely dependent on an organization’s ability to foster enduring and valuable knowledge, and to adjust investment strategies accordingly.

RESEARCH METHODS

Over the course of this three-year research project, we have conducted two surveys and interviewed dozens of investment professionals. We believe this an appropriate methodological approach, as this paper does not seek to establish causality or even correlation. Rather, this paper seeks to “map out” the current KM landscape in AM and makes some rudimentary assessments and predictions about its future prospects. Expert surveys and elite

interviews with decision-makers provided us with a detailed understanding of the current – and indeed potential – role of KM in AM.

In terms of surveys, both the American and Dutch surveys were constructed as “expert” opinion surveys. Expert surveys like these are important tools in social science research where quantitative, primary data is missing, as was the case for KM in AM [Castles and Mair (1984)]. The first survey was delivered by the Dutch Investment Professionals Association (VBA), which helped to coordinate an online survey in 2012 that had 74 expert respondents. The survey was written in Dutch and consisted of twenty multiple-choice questions, of which five related to the profile of the respondent and fifteen to KM. The majority of respondents (54%) held a senior executive position as board member or managing director at asset managers and asset owners. This survey’s aim was to gain a general understanding of investment professionals’ views on: (I) the basics of KM’s value to an asset manager; (II) the type of knowledge that is related to investment performance; and (III) the ways in which investment organizations can operationalize KM.

Based on the results and experience with the pilot survey in the Netherlands, we conducted another survey on the same topic that targeted U.S. investment professionals. This survey consisted of 19 multiple-choice questions, of which four were related to each respondent’s profile. The three focus areas remained the same: (A) the added value of KM, (B) the type of knowledge related to investment performance, and (C) points of particular interest in KM. The advantage of this survey over the VBA survey was that it was possible to drill down into the responses according to specific respondent-groups. Moreover, some questions were adjusted to gain additional insights. Pension & Investments distributed this survey electronically to their subscribers. The survey remained open for three weeks from August 19 till September 9, 2013. A total of 243 responses were received.

Next to the two surveys, a group of 20 asset managers were interviewed during the period September 2012 to December 2015. This fieldwork was used to develop a set of detailed KM case studies [as per Helper (2000); Feldstein (2000); Aberbach and Rockman (2002)]. The organizations in this fieldwork included: JP Morgan IM, State Street Global Advisors, Blackrock, AXA IM, Robeco, GMO, Bridgewater, Templeton, Pimco, Lombard Odier, Blenheim, MAN Group, Blackstone AM, KKR, Neuberger Berman, Goldman Sachs Asset Management, Kepos Capital, PDT Partners, Stanford Management Company and AQR. This group of 20 was selected to ensure a representation of a variety of differing asset management business models. The interviews took place face-to-face with senior executives and were often followed up with an email exchange for further clarification and additional questions. Although the names

of the asset managers are noted above, these organizations will receive anonymity for the remainder of the paper. In securing privileged access to these organizations, we agreed to respect the social science guidelines concerning confidentiality and anonymity of respondents [in line with the approach of Clark and Urwin (2008)].

In summary, over the past three years we have sought to investigate KM and AM in a variety of ways. The key research findings from this work are synthesized below. Details of the survey results are provided in the appendix.

KEY RESEARCH FINDINGS

At a high level, most of our respondents saw knowledge as overwhelmingly positive and a beneficial asset to an investment organization. However, most of our respondents also lacked a deep understanding of KM and identified many barriers hindering its implementation. In what follows, we provide the key insights from the research project to date:

- **Appreciation and (un)familiarity:** in our surveys and interviews, we defined KM as the explicit and systematic management of knowledge – and its associated processes of creation, organization, diffusion, use, and exploitation – in pursuit of business objectives. We sought to register a distinct difference between data, information and knowledge within our respondent groups and focus their thinking around the action of using knowledge to make investment decisions. Despite that, the findings of our research painted a picture of an AM industry largely indifferent to KM. The survey respondents, for example, suggested that a majority of the industry was only vaguely familiar with the concept of KM. Indeed, few organizations in our research had a clear definition for what KM was, let alone tracked the benefits of KM activities. Many investors were also confused about what KM was and how it could be applied within their organizations to create value. For example, a significant number of respondents pointed to “data and information” as the primary focus of KM, which, again, is misguided. Respondents also failed to recognize the gap between the types of data and information they received and the type of information they required to implement successful investment strategies, let alone to create new knowledge. Only the hedge funds in our research emphasized that having access to unparalleled data and knowing how to apply information was at the core of their business. Interestingly, KM was so poorly understood among our respondents that even those asset managers with clear KM strategies in place did not actually recognize them as such; it was often framed as just

“good organizational practice.” Key takeaway: Our respondents – from surveys and interviews – proclaimed to appreciate KM and even noted its important role in superior investment results. This appreciation, however, rarely translated into pro-active KM policies, let alone KM resources being allocated deliberately.

- **Significance and relevance:** among those investors that actually did value knowledge in our research, the value of KM was perceived very differently depending on the organization. For example, several interviewed asset managers expressed the importance of knowledge in their organizations, even noting that knowledge was part of their competitive edge and that this edge would grow more important over time. However, these same organizations differed considerably in the value they assigned to explicit and tacit knowledge. The quant-oriented asset managers did not believe in the value of tacit knowledge at all, as their strategies were often fully coded and made accessible to the whole organization. Other asset managers expressed that their star-performers have specific traits; for example, they are quicker to act, are “street-savvy” and know how to draw connections between rare events and asset pricing. Additionally, consensus was that academic research played an important role in the industry, and several asset managers in our research had even established intensive working relationships with academics. In spite of this, there was considerable ambiguity with regards to the value-add of academic research, especially when it is already published. It was for this reason that several of the interviewed asset managers fiercely protected their proprietary research. Yet, others claimed that publishing research was part of their business model to support the industry’s thinking, but that the operationalization of academic research often failed. In addition, a large majority of survey respondents felt that knowledge was context specific; that it would be very hard to generalize knowledge from setting to setting or even organization to organization. Several interviewed asset managers also pointed out that successful portfolio managers often failed when they moved companies. An explanation for this observation could well be that the skills of the portfolio manager are no longer a match with the available data and information in the new environment. Take away: even within investment organizations that have a strong appreciation for KM, the value of KM is often perceived differently among them. There was no consensus as to the kinds of knowledge that were particularly valuable, albeit tacit knowledge was more directly linked to excess returns. Nonaka’s approach that knowledge is created by means of a continuous cycle between explicit and tacit knowledge is absent. Nor was there a consensus on the drivers of KM’s value – for people or organizations – which suggests that even among these leaders there was room for a more structured understanding of KM.

- **Measurement and calibration:** although it may be difficult to measure the value of knowledge in monetary terms, we found that measuring the knowledge ecosystem was critical to the success of KM in AM. Indeed, to ensure proper resourcing and structuring of KM operations first required that the organizations track and communicate the benefits of KM by means of key performance indicators (KPIs). This, in turn, helped the organizations develop internal legitimacy for a KM culture and dedicated KM resources. Depending on the degree of complexity, transparency, profitability, and costs involved, technology was highlighted by many funds in our research as critical to evaluating and delivering KM value to the investment professionals (see below). Similarly, KM technology platforms often provided a venue to challenge existing knowledge, which was something our respondents flagged as critical. Indeed, it was noted that there is no place for complacency in KM, and the possession of superior knowledge should be challenged regularly. Yet, many asset managers are in an early stage and costs precede unfamiliar (see first key insight) benefits. Take away: developing a coherent and well-designed KM organization can be costly. Justifying this cost – to leadership and indeed the board – demands that KPIs be developed that allow for the assessment of KM policies. In addition, these KPIs also help with the assessment of the on-going value of existing knowledge.
- **Technology and infrastructure:** effective, transparent and quantifiable KM programs and policies will inevitably require new technologies. For example, large asset managers in our research specifically noted that technology was crucial in realizing operational efficiency gains as well as helping to improve on communication by bridging physical distances. Technology was also shown to facilitate the creation of collective knowledge by means of intranets, libraries and staff directories, among other things. More specialized managers used technology to code their in-depth knowledge, and hedge funds coded and stored almost everything that was codeable and storeable. Still, it also became clear that many asset managers were struggling to get their basic diagnostics in place. Data management (collecting, cleansing, and integrating data) is in place and provides standard descriptive information. This is often restricted to traditional data, such as statistics issued by government bodies, company data, and market data. But data intelligence (filtering, combining, and extracting relationships from data) is often still a challenge, especially when new data sources (big data) come into play.⁵ This means that KM is little more than a long-term ambition. Despite the surge in FinTech companies, it became clear that technology companies had also not caught up with the financial industry's fast development and focus on KM. As a result, many AM firms were frustrated by having to rely on a panoply of scattered and legacy technology platforms that

could hardly support traditional investment strategies (let alone anything more innovative). In fact, investment teams often relied on their own models and data sources, which lacked in quality, documentation and transferability. Take away: embedding KM into AM organizations will inevitably require technological sophistication to allow for transparency, institutional memory, rapid query, and communication. That being said, while it is common to associate KM with information technology [Ball (2006)], IT is insufficient. Technology must deal with more than data and information; it must also help to store and distribute knowledge, and support knowledge creation. As such, teams of IT specialists may need to work very closely with the investment professionals to make sure that the right data and information is in the systems.

- **Governance and leadership:** a percentage of our respondents seemed to be of the opinion that KM was not a board responsibility. Similarly, few of the respondents saw KM as the right of the Chief Investment Officer (CIO). And yet, consistent with the idea that knowledge provides a competitive edge and should guide investment decision-making, especially in active management, research would suggest that the boards or CIOs should in fact seek oversight and responsibility of KM. Moreover, our respondents noted that creating new tools and processes to collect and pool knowledge was critical to KM. They also noted that for KM to succeed, barriers to knowledge transfers should be dismantled. A lack of incentives (financial and otherwise) was deemed to be the key impediment to overcoming KM log-jams. It was thus noted that actively supporting the existence of knowledge assets is also something that should be embedded in compensation schemes. All of these critical elements to the success of KM are the responsibility of boards and the C-suite. Take away: the Board and C-suite should be leading the way in defining the strategic benefits of KM and not treat KM as a by-product of its operating model. Moreover, KM is not a costless exercise; it requires people, process and technology to get right. As such, it will require sufficient resourcing.
- **Culture:** We found throughout our research that organizations must create a culture that supports KM. Indeed, culture works as a catalyst related to corporate goals. We found that this meant, in practice, mixing professionalism, creativity, collaboration, and hard work. Whatever form or shape of asset manager, knowledge capital is perceived as the differentiating factor for an investor's success. Making better investment decisions is also an important common goal; one should feel free enough

⁵ This finding was confirmed in Citi's "Big data & investment management" (2015) stating: "...for most investment managers these changes in approach are still highly aspirational and there are still several obstacles limiting big data adoption."

to express opinions and ideas and to give and receive criticism. In managing culture, several asset managers in our research used their founders and senior partners to protect the firm's uniqueness and investment philosophy by coaching younger staff. This way the (tacit) knowledge, which is considered the company's competitive edge, is passed on. Transparency and consonance were also identified as important elements of the corporate culture too, as these factors often triggered the right questions and lead to loyalty and low turnover. It also appeared to be easier for the smaller firms and partnerships to create the right culture; the larger firms needed to introduce more formal structures. Moreover, many respondents viewed that individual proprietary knowledge was a source of power within an organizational context and would not want to cede that power. Take away: Human capital and culture are of utmost importance to developing knowledge, which means AM organizations must focus on hiring people with different backgrounds and traits, and prioritize collective knowledge as a core value.

In summary, our research has showed that the large majority of asset managers have not adopted KM practices, and most viewed it as a subset of IT rather than a strategic lever to guide decision-making. Worse still, neither the boards nor the C-suite have prioritized KM efforts, still relying instead on their star-performers. The lack of understanding of technological developments by boards and c-suites only reinforces the underinvestment in KM. This helps to explain why knowledge transfers are often made more difficult due to organizational constraints. In order to improve KM practices, asset managers recognize a need to reorganize their operations. They pointed towards new technologies and new incentives that could help investment organizations mobilize knowledge. They also recognized the importance of people, culture, and organizational design. These findings are far from earth shattering as they touch on the three drivers behind an asset manager's business model mentioned in the introduction: human capital, market intelligence, and governance. But the crucial point of these findings is that knowledge has not been appreciated as the factor that binds these three drivers together. In the section that follows, we use our research findings to provide an initial "KM roadmap" for those investment organizations that would like to become better stewards of knowledge.

THE "KM ROADMAP" FOR AM

Knowledge is about converting information into action. Superior knowledge refers to the understanding of how to successfully apply the appropriate information through skill and process. For knowledge to provide an investment organization value, it has to

be accessible. As Javernick-Will and Levitt (2010) remind us, most organizations do not know what they do know let alone what they do not know, which means they require structured ways of learning and sharing. And, as we found in our research, this is particularly true in AM. In this section, then, we build on the findings from our research above and offer an initial KM roadmap that could help AM organizations capture the value of knowledge. Readers should note that this roadmap takes the strategic goals, market positioning, and governance of the AM firm as a given and focuses entirely on the investment process.⁶

Beliefs: The CIO's first "knowledge" task is to come up with a set of investment beliefs, which provide guidance to the type of investment strategies and styles pursued. These investment beliefs are firmly held opinions, but often lack proof. Still, theoretical groundings must be in place, which must be well documented and made available to the whole organization. The investment beliefs should be made part of the investment culture of the firm, i.e., the firm's pride of ownership rather than a proclamation from the top. Every employee should feel accountable for these investment beliefs.

Investment strategy: investment beliefs are often stated in general terms, but need to be translated into clear investment strategies that add value. This is typically where the CIO relies on the investment experts per asset class as a source of in-depth knowledge of market structure, market dynamics, and instruments. Investment strategies need to be clearly substantiated by means of in-depth empirical research and regularly tested on their merits. In that respect, both supporting and falsifying evidence should be assessed. The next question is whether the market offers enough investment opportunities to add value. To answer this question, Grinhold's "breadth" component in the law of active management provides a useful point of action. As was explained, the breadth of the market implies the potential for active investment opportunities. It is important to make this assessment as explicit as possible in order to test the true merits of the proposed investment strategies, but also to assess the alpha capacity. For example, a distinct alpha source pursued by many asset managers leads to a crowded market, which limits the alpha potential. Based on KM consideration, a decision must be made about whether it still makes sense to pursue an investment strategy related to that alpha source.

⁶ KM can be applied to all aspects of the AM business and is not constrained to the investment process. Marketing, product development, account management, and operations all benefit from a strategic KM approach.

Skill alignment: given the investment beliefs and the investment strategies, the CIO should decide what “skill” component (possession and use of superior knowledge) in Grinhold’s equation is required. Formal training, competences, traits, and experience should match the investment strategies and styles the asset manager wants to pursue. For example, a fundamental analyst is not very likely to exploit complex derivatives and arbitrage opportunities or see use for high frequency trading. Likewise, a quant portfolio manager is less likely to be involved in a focused strategy with a lot of engagement with the companies in the portfolio. But likely important is the required diversity to be able to change quickly to changing market conditions and the level of experience to implement investment strategies successfully. To truly get a grip on the available skills, an asset manager should start measuring the skills of its own investment people. Skill, or information coefficient, was defined as the correlation between ex-ante and ex-post performance. To put this differently: how many times is the investment manager right? A methodical analysis needs to be put in place to measure the information coefficient. This requires that much more detail about trades and holdings in the investment portfolio be registered. Not only does this lead to an overall number indicating the level of skill,⁷ but it also provides information on the specific strengths and weaknesses of the investment manager.

Data and technology: different investment strategies and styles go hand-in-hand with specific datasets and information requests. Every mismatch and/or inferior quality of data and information could jeopardize the validity of the chosen investment strategy. Digitalization means that an ever increasing number of datasets become available. Still, more data does not mean more knowledge. Investment skills should include the ability to think about new relationships between data and asset prices. New technology can support finding these new relationships. In addition, decision support tools are not limited to individual trades and portfolio construction, but extend to risk analytics⁸ and transaction costs analysis as well. The goal of these decision support tools is to optimize the return potential as much as possible and to avoid any form of performance leakage.

In summary, the challenge related to KM is to find the right match between the investment beliefs and investment strategies on the one side and the required skills, data, and technology on the other. A very first step is to determine KPIs, as illustrated in Table 1.⁹ However, there is no rulebook regarding the optimal set up. Asset managers must measure different KPIs over time and analyze their impact on the overall investment performance. In order to facilitate statistical analysis, a KPI indicator and/or sub-indicators can be developed that the CIO could share with the senior investment professionals, who could then relate these findings to changes in the

Investment beliefs	<ul style="list-style-type: none"> • Number of years the investment beliefs have been in place • Number of adjustments to the investment beliefs within a certain period • Number of supporting/falsifying research papers taken into account • Number of internal meetings on investment beliefs • Number of training sessions/workshops held on investment beliefs • Number of meetings with academics/external think tanks to discuss beliefs
Investment strategy	<ul style="list-style-type: none"> • Number of fully documented asset classes • Number of updated market documents • Quantified value add per investment strategy • Number of new investment strategies proposed versus strategies canceled • Number of different instruments required per investment strategy • Turnover per investment strategy
Skill alignment	<ul style="list-style-type: none"> • Number of staff per investment strategy • Inventory of team characteristics per investment strategy • Information coefficient per investment manager • Number of identified knowledge assets within the firm • Amount spent on formal training per investment manager • Ratio of front office to back office
Data and technology	<ul style="list-style-type: none"> • Number of issues reported by data integrity board • Number of internal and external data sources • “Actual-target” comparison of data and information • Number of system used and number of system upgrades within a certain period • Computational power of the different systems • Number of positive sign-offs by investment staff on technological changes

Table 1 – KPIs

investment environment and their performance. This feedback loop in itself will lead to a better understanding (new knowledge) of the investment process and provide guidance for further improvements and adjustments of that process.¹⁰

⁷ In general, investment managers are considered skillful when they get more than half of the investment decisions right.

⁸ For example, market risk, counterparty risk, liquidity risk, and operational risk.

⁹ The KPIs given were just a limited and straightforward set for illustration purposes only.

¹⁰ Clearly, next to the internal analysis, the CIO should be very interested in the set-up of its main competitors in order to find specific strengths and weaknesses.

IMPLICATIONS AND CONCLUSIONS

Financial markets have been the beneficiaries of a three-decade decline in interest rates. This has meant that generous passive market returns have contributed significantly to overall portfolio returns. Adding value above the market in this period was nice, but it was not critical for funds to achieve their objectives. Looking to the future, we are facing a more modest outlook for long-term financial market returns, heightening the importance of adding value above benchmarks. Indeed, value added returns will inevitably become a significant contributor to overall portfolio returns in the future. And delivering these value-added returns will require rethinking the way we assess, access and manage investment opportunities. It will require far more sophisticated KM.

It is important to note that the best investments tend to be found in areas where markets are inefficient and where information does not freely travel. It is perhaps an oversimplification to say it, but if an opportunity fits in a box or a silo, it is likely overbid and overvalued. The best investors thus use their unique characteristics in a deliberate attempt to move into markets with minimal competition. For example, being a long-term investor offers additional options to what short-term investors can do. Moreover, being a local trusted partner to companies and project developers in a given jurisdiction can create unique and proprietary opportunities. Finally, a large investor may be constrained in its ability to access top managers, pushing it into alternative access points for similar risk exposures.

It is important we understand and include the unique characteristics of our investment organization in any strategy we formulate to guide our investing. Generally, the unique characteristics of an investor can be broken down into three categories: people, market intelligence, and governance. Persistent outperformance requires an investment organization to apply high caliber people and efficient processes in creative ways to develop proprietary sources of information and, ultimately, knowledge. And it is this knowledge that allows investors to generate outperformance, which will go hand-in-hand with statistical proof on historical track records.

Put another way, maximizing the returns that can be achieved per unit of risk and per fee dollar spent (implicit and explicit) requires an organization that is thoughtful about its own advantages and proactively seeks to use those advantages in the context of broader market forces. In our view, the AM industry has underappreciated the power of KM in this regard, but this will soon change.

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APPENDIX 1: VBA SURVEY

Table A1.1: KM's value to an asset manager

1. What is the primary focus of KM?	
Data and Information	21%
The firm's knowledge and expertise	35%
Knowledge assets, being the informal structure of knowledge	28%
Intangible assets, such as brand name, partnerships, and goodwill	14%
Don't know	2%
2. What activity can benefit the most from KM?	
Investments	33%
Research and strategy	35%
Operations and IT	12%

Marketing and sales	19%
Don't know	1%
3. What activity relies on implicit knowledge the most?	
Investments	40%
Research and strategy	28%
Operations and IT	8%
Marketing and sales	24%
4. What activity would benefit the most from turning implicit into explicit knowledge?	
Investments	35%
Research and strategy	30%
Operations and IT	11%
Marketing and Sales	24%
5. Who should be responsible for KM?	
Chief Executive Officer	26%
Chief Investment Officer	37%
Chief Financial Officer	3%
Chief Information and Technology Officer	11%
Chief Marketing and Sales Officer	3%
It concerns a line-responsibility	20%

Table A1.2: Type of knowledge related to investment performance

1. The generation of market performance (beta) is a function of	
Explicit knowledge	30%
Implicit knowledge	3%
Explicit and implicit knowledge	55%
Don't know	12%
2. The generation of excess performance (alpha) is a function of	
Explicit knowledge	5%
Implicit knowledge	7%
Explicit and implicit knowledge	80%
Don't know	8%
3. Would knowledge management harm the performance of a star-performer	
Yes	21%
No	49%
Don't know	30%
4. Does a direct relation exist between knowledge assets and academic research?	
Yes	50%
No	27%
Don't know	23%

Table A1.3: Ways in which investment organizations can operationalize KM

1. What is the most effective manner to share knowledge?	
Informal and regular talks	39%
Formal meeting schedule	16%
Training-on-the-job	22%
Internal courses	17%
External courses	5%
Don't know	1%
2. What is the main barrier to overcome in KM?	
People don't share knowledge that gives them a competitive edge	30%
There is no individual financial reward for sharing knowledge	32%
Knowledge is too specific; sharing has no impact	12%
Most knowledge is tacit and cannot be coded	18%
There is no barrier	7%
Don't know	1%
3. How can knowledge assets be protected?	
Specific clauses in labor contracts	13%
Continuing education and innovation	42%
Treat staff on a "need to know" basis	3%
Patents	2%
Knowledge assets cannot be protected	39%
Don't know	1%
4. Is the value of knowledge assets context dependent?	
Yes	77%
No	14%
Don't know	8%
5. Can the value of knowledge assets be measured in terms of money?	
Yes	34%
No	34%
Don't know	32%
6. Does your organization use KPIs re KM?	
Yes	9%
No	84%
Don't know	7%

APPENDIX 2: P&I SURVEY

Table A2.1: Added value KM

1. Given the definition of KM, please select the statement that best reflects when KM would be of importance for your organization	
KM is never important for my organization	2%
KM is only important for my organization during times of "normal" market activity	3%
KM is only important for my organization during times of "abnormal" market activity	3%
KM is sometimes important for my organization for reasons that do not depend on market activity	18%
KM is always important for my organization	74%
2. If an AM firm does not have a KM system in place, do you think it could achieve a more stable business model by using one?	
Yes	55%
No	6%
Do not know	32%
3. If an AM firm does have a KM system, do you think that system contributes to a more stable business model?	
Yes	65%
No	5%
Do not know	25%
4. Do you believe that building or improving KM systems justifies higher fee levels?	
Yes	15%
No	68%
Do not know	17%
5. If KM were a board responsibility, who should be responsible?	
Chief Executive Officer	27%
Chief Financial Officer	4%
Chief Operating Officer	16%
Chief Client Officer	1%
Chief Technology Officer	2%
Chief Investment Officer	30%
KM is not a board responsibility	17%
Other	4%

Table A2.2: Type of knowledge related to investment performance

1. For generating “beta” return (market return), which of the following is most important?	
Explicit knowledge (what can be codified)	25%
Implicit knowledge (what is difficult to codify, such as experience)	6%
Explicit and implicit knowledge	59%
Neither are important	4%
Don't know	7%
2. For generating “alpha” return (excess return), which of the following is most important?	
Explicit knowledge (what can be codified)	14%
Implicit knowledge (what is difficult to codify, such as experience)	25%
Explicit and implicit knowledge	56%
Neither are important	1%
Don't know	4%
3. Do you believe that the collective knowledge of investment teams is more critical to generating excess returns than the individual knowledge of a star performer?	
Yes	73%
No	15%
Don't know	12%
4. Do you believe that integrating a star performer's knowledge into the organization's pool of shared knowledge would help or harm the star performer's investment performance?	
Harm	8%
Help	62%
Neither harm or help	17%
Don't know	13%
5. Do you believe that results found in academic research will lead to better investment strategies?	
Yes	64%
No	18%
Don't know	18%

Table A2.3: Points of particular interest in KM

1. What would be the most effective knowledge transfer process?	
Daily, informal one-on-one meetings	38%
Formal business meetings	9%
Training-on-the-job	17%
Internal professional training	20%
External professional training	5%
Other	11%
2. What is the biggest hurdle to setting up KM within an AM firm?	
Portfolio managers protect “their” knowledge as it gives them a competitive edge	32%
Compensation structures are not linked to sharing knowledge	33%
Most knowledge is so specialized that it doesn't make sense to share	3%
It is simply not possible to make most investment knowledge explicit and/or to codify	17%
There is no need: all necessary knowledge is readily available	4%
Other	12%
3. Do you believe that firms can and should set KPIs that are specific to KM?	
Yes	59%
No	14%
Don't know	27%
4. Which of the following incentives should be successful in encouraging transfer of tacit knowledge (i.e., knowledge that is difficult to codify)?	
Bonuses linked to transferring tacit knowledge to the organization (e.g., reports)	24%
Bonuses linked to transferring tacit knowledge between individuals (e.g., mentoring)	23%
Non-monetary incentives linked to transferring tacit knowledge to the organizations	15%
Non-monetary incentives linked to transferring tacit knowledge between individuals	17%
Incentives do not work for tacit knowledge transfer	13%
Do not know	8%
5. Can incentives be used to make managers self-critical in examining the knowledge they possess?	
Yes, monetary incentives can be used	17%
Yes, non-monetary incentives can be used	9%
Both can be used	43%
No, incentives do not help managers to become self-critical of the knowledge they possess	16%
Do not know	15%

6. Can KM systems be constructed so that they successfully delete or update knowledge that has become obsolete?

Yes	33%
No, deletion of obsolete knowledge could not occur in a timely manner	3%
No, it would be too difficult to accurately identify obsolete knowledge for deletion	22%
Both "no" answers apply	14%
Do not know	28%

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