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Managing Experts and Creative Talent

by David J. Teeceⁱ

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I. Introduction

It is increasingly well recognized that the (durable) competitive advantage of business firms flows from the creation, protection and deployment of difficult-to-imitate knowledge assets. Such assets include tacit and codified know-how, associated with individual employees or embedded in organizational routines. Such know-how may be protected from imitation by the instruments of intellectual property such as trade secrets, copyrights and patents, or it may be part of the organization's difficult-to-replicate culture and routines.

Innovation in service businesses has attracted increased scholarly attention in the past twenty years. Service businesses, including professional services, are quite diverse and follow a number of different innovation strategies (Tether et al., 2001). Within service businesses, initiatives to expand capabilities and accelerate growth almost always involve the generation, application, and replication of new knowledge.

In recent decades, a greater emphasis on the creation and management of knowledge has served to highlight the importance of the management of expert talent (Reich 2002; Albert and Bradley 1997). The growing organizational and technical complexity of problems facing the business enterprise have heightened the need for both highly-trained specialists and inspired generalists.

The management style required for enhancing the productivity and contribution of experts is fundamentally different from that applicable to regular line employees. Traditional authority structures often impair expert performance; a much lighter management touch is needed. In fact, the quality of modern management may well be defined by the capacity of the business enterprise to allow/enable highly talented individuals to enjoy the guided professional autonomy they seek, while simultaneously fostering collegiality and delivering intellectual stimulation and professional and financial fulfillment.

The outputs of knowledge creation include a wide range of intangible assets, such as various types of new products, intellectual property, and organizational capabilities. A particular set of forward-looking capabilities called “dynamic capabilities” (Teece et al., 1997) are tied directly to the fortunes of the enterprise. Strong dynamic capabilities can allow the organization to adapt to (or even bring about) changes in the business environment (Teece, 2009).

The thesis advanced here is that today the competitive advantage of the enterprise in most industries is rooted in the ability to motivate experts to create knowledge, help build organizational capabilities, and help shape strategy. If combined with good intellectual property protection, control over specialized assets, and a good business

model, collective efforts at knowledge creation and renewal can help the enterprise build durable competitive advantage over rival firms.

The chapter begins by laying out a conception of knowledge creation and management as a collective process. The next sections focus on experts (*literati* and *numerati*) as knowledge creators and on how they can best be managed to encourage the generation of new knowledge. The following section turns to the managers themselves, including their entrepreneurial role guiding the creation of knowledge and its application to the challenges and opportunities that the enterprise faces. A concluding section summarizes the chapter in a knowledge model of the enterprise.

II. Knowledge creation and management

A key to understanding the growth and financial success of a firm is not to study the balance sheet too closely; rather, it is to analyze how the firm creates, protects, and utilizes knowledge. Knowledge, however, is a much misunderstood concept.

Early views of the role of knowledge in the enterprise were very technical. During the height of managerial capitalism in the early- to mid-twentieth century, knowledge management advocates counseled recording and quantifying as much as possible. Following World War Two, knowledge was often defined as technology, and the R&D department was seen as perhaps the only fountain of knowledge creation.

More recently, scholars, notably Ikujiro Nonaka, have taken a more expansive view. Nonaka (1991) sees knowledge creation as an ongoing process distributed throughout the enterprise. Service firms large and small have implicitly accepted elements of this model (Sundbo and Gallouj, 1998).

In Nonaka's conception of knowledge, new knowledge is socially created through the synthesis of the subjective tacit knowledge of multiple individuals after that knowledge has been articulated, externalized, and shared. Some of the newly created knowledge will remain tacit and therefore hard for rivals to imitate.

This knowledge creation process must be guided by the company's vision for what it wants to become and the products it wants to produce. This vision of the future must be more than simply a set of financial targets. Good leaders can accelerate the growth of knowledge by creating a mission and a corporate identity that employees find attractive.

The locus of knowledge creation is considered to be a team, whose members are drawn from different functional perspectives. The team leader must guide the team to build mutual trust so that individuals contribute their tacit knowledge for synthesis into a collective output, such as a new product or service concept (Nonaka, 1994). Teams should be given autonomy to achieve their goals within budget and timing constraints. Upper management must then screen the results for consistency with corporate strategy and other standards.

The management of knowledge across the enterprise must go beyond the assembly of data and discrete facts that can be stored in databases or on intranets. Facts are information, but they are not necessarily knowledge. The data and documents in a database cannot generally be recombined to make new knowledge. Individual knowledge, in order to be most useful to the enterprise, must be shared.

Databases have their place. Information about the knowledge of employees (but not the knowledge itself) needs to be widely available in order to increase the likelihood

that any given employee will be able to locate the necessary expertise to address a particular challenge. This level of information is vital for effective service delivery.

Sets of facts and figures and established methods or routines for their use can also play a supporting role (Werr and Stjernberg, 2003). At Seven-Eleven Japan, for instance, front-line employees are trained to build hypotheses about what customers at their store want, and their hypotheses can be sharpened by consulting historical data from an extensive internal system that contains not only point-of sale data and recommended product displays but also connects to company headquarters and to manufacturers (Nonaka and Toyama, 2007). The information in the database complements the knowledge of the employees.

Documentation of past and current projects will be more important in some settings than others. Scientists, for example, may keep the minimum required documentation and restrict their consultation of others' previous work, while lawyers will frequently ensure that every aspect of a project is documented meticulously (Robertson et al., 2003).

Different approaches to knowledge management may also reflect differences in the markets targeted. Models that emphasize the reuse of codified knowledge may be more important for firms pursuing a low-cost strategy, whereas a less-documented, expert-based approach may be appropriate where unique problems, customized solutions, and higher fees are the norm (Hansen et al., 1999). Naturally, an organization's approach to managing knowledge has profound implications for organizational choices in the areas of whom to hire, how much to rely on information technology, and what to pay.

III. Knowledge creators: the literati and numerati

As this discussion of knowledge makes clear, a company adds to its stock of knowledge by guiding and motivating employees who possess skills or knowledge. Expertise is vital for the viability of all services firms, and it is central to the existence of professional services firms that need to provide fully customized solutions for their clients.

The creative, analytical, and “rainmaking” abilities of leading professionals are very valuable to an enterprise—and generally priced accordingly. Skills that can help solve complex problems, make critical decisions or resolve complex disputes, help professional service firms win business. They may also help design and develop new products and services.

This is not to say that experts and highly credentialed professionals per se are what make a company great. To be successful, organizations must develop distinct processes, a good reputation, and other intangibles. In fact, if a company becomes too dependent on one or a handful of individuals, and especially if they are remunerated extravagantly, the morale of all employees can be undermined. And hiring more experts generally can’t save a dysfunctional organization (Pfeffer, 2001).

Individual productivity in many fields is quite skewed. This was first observed by Alfred Lotka (1926) in a study of the authorship of articles in nineteenth century physics journals. Lotka found that approximately six percent of publishing scientists produced half of all papers. Lotka’s results are reasonably robust—they have been shown to hold for many disciplines in many different time periods.

Two important categories of expert with regard to knowledge creation are the literati and the numerati. Both groups are marked by high levels of education and/or

experience. A third category important to both are the integrators—professionals who help synthesize the work of others.

The literati tend to have both undergraduate and graduate degrees in arts and sciences, economics, business, or law. The numerati are likewise highly educated, but in engineering, mathematics or statistics; the sciences, including computer science; information systems; or accounting and finance. In some fields, such as computer science, experience can substitute for an advanced degree. In other fields, like medicine, both academic and practical (clinical) training are necessary for deep proficiency.

Both groups have significant analytical skills, but the literati tend to be more specialized at synthesis and the communication of ideas. The numerati excel at analysis, especially of large data sets.

Many organizations have some chance of attracting or developing top talent. Most western economies are experiencing high labor mobility. The relative decline of corporate pension plans, the weakening of strong corporate cultures, and the erosion of loyalty towards employers have increased the opportunity for head-hunting highly skilled employees.

Some avenues for securing the services of experts may be a better fit with the firm's capabilities than others (Chambers et al., 1998). For example, hiring new graduates makes the most sense for a firm with an adequate training program. But their positive impact on the firm may not be immediate. In a longitudinal study of large US law firms, Hitt et al. (2001) found that less experienced partners were negatively correlated with firm performance but over time the effect became positive.

Reich (2002: 107) and many others have observed that talented people can earn more today, relative to the median wage, than could talented and ambitious people in the industrial era. Globalization has allowed the best talent and ideas to be leveraged rapidly across larger market spaces than ever before. Where the stakes are high, top talent that can make a difference is able to earn exceptional rewards.

External recruitment of top talent must be performed by experienced professionals who are able to make good assessments, and are in turn made accountable for their decisions. Otherwise, attempts to compete for “star” talent from external sources may produce a bad case of “winner’s curse.”

The same factors that have made top talent more available by decreasing allegiance to specific firms also make it harder to retain experts, making it all the more critical that management addresses their needs. Research shows that those with the most training, education, and ability are the most likely to quit if dissatisfied (Sturman and Trevor, 2001).

Incentives for motivating and retaining expert talent can be both financial and non-monetary. These are more complements than substitutes; where experts are concerned, more money will generally not make up for an unsatisfactory work environment.

Getting financial incentives right is fundamental. Suffice to note that there is ample evidence that pay for performance is associated with higher performance at both the individual (Jenkins et al., 1998) and organizational levels (Gerhart, 2000). The resulting pay differentials are generally accepted among top talent—so long as they are truly capability/performance based.

Unfortunately, the more discretion that management has to set pay, the more energy and resources are likely to be wasted by people trying to capture a larger share of the available resources (Milgrom and Roberts, 1996). This can best be avoided by setting quantifiable performance metrics as the basis for pay, but this is not always possible (Teece, 2003)

In setting pay levels, it is important to distinguish between intrinsic talent and contextual talent. Intrinsic talent is talent which provides/commands full value on a stand-alone basis. In a professional services organization, for instance, this might represent the business that professionals can source based on their own wits and capabilities, i.e., independent of the brand or platform on which they stand.

Individual contextual value can exceed intrinsic value when the individual's activities depend heavily on the other complementary assets (such as infrastructure and brand) that the organization provides. Context can be a large component of value, especially in circumstances where teams must be employed to get the job done, and when the firm's infrastructure, methods, and staffing play important support roles.

A firm may not need to pay as much for an expert whose "star" quality is so firm-specific that it would not transfer very well to other settings. An important exception is when the contextual skills and knowledge of the individual would be difficult and costly to replace if the expert departs.

Getting pay wrong can lead to a loss of competitiveness. In a professional services firm, where human capital is more important than any other inputs, it can lead to the departure of key experts, possibly benefitting rivals and beginning a negative feedback process in which reputation and quality decline (Teece, 2003).

For employee retention, compensation at competitive levels may be necessary but not sufficient. Other accouterments of the job environment that matter include the organization's culture, the quality of its management, the challenge of the work, and the autonomy afforded workers. Companies that rank higher on these and similar "quality of work life" measures outperform their peers in retention (Chambers et al., 1998: 50).

IV. Managing and organizing the literati and numerati

The presence of potentially valuable creative people and/or experts only adds value to the enterprise when they are properly managed and organized. The mode of management that is most likely to bring great results is distinctly different from that required for ordinary operations.

Two important considerations for managing creative talent and experts are (1) they respond best to a less hierarchical approach than might be used elsewhere in industry more generally and (2) their creativity is most likely to flourish in an environment of open collaboration.

A. Light-touch management

With respect to the literati and numerati, strongly authoritarian management aimed at forcing people to collaborate is anathema. Management must have a light touch.

Otherwise cooperative efforts will be suppressed, and creativity will be compromised.

Management is seldom sufficiently informed to second-guess the difficult and granular

technical tradeoffs and judgments of the literati and numerati with respect to solving the problem at hand.

The commonest purpose for hierarchy—to delegate tasks to “workers”—is simply not needed for many types of creative or expert professional work. Experts tend to be substantially self-motivated and self-guided. While some degree of bureaucratic organization is inevitable in large organizations, it must support the activities of experts without trying to rigidly control them.

Accordingly, management of creative and expert talent usually needs to be decentralized or “distributed.” Traditional notions of management that rely heavily on hierarchy and decisions driven from the center are unlikely to work well. Of course, strong accountability is still required from the literati and the numerati. Autonomy and accountability go hand in hand; the more easily performance can be measured, the greater the autonomy that can safely be permitted.

Self-organized cooperative activity is frequently observed in scientific and creative engineering projects. Richard Nelson (1962) studied the development of the transistor at Bell Labs and noted that creative collaboration

requires that individuals be free to help each other as they see fit. If all allocation decisions were made by a centrally situated executive, the changing allocation of research effort called for as perceived alternatives and knowledge change would place an impossible information processing and decision making burden on top management. Clearly the research scientists must be given a great deal of freedom... (p. 569)

Nelson also noted that “the informality of the decision structure played a very important role in permitting speedy cooperative response to changing ideas and knowledge” (p. 579).

Fifty years later, the same lessons—particularly the importance of decentralization and flexibility for knowledge creation—were being relearned. John Chambers, CEO of the US-based network equipment company Cisco, remarked: “In 2001, we were like most high-tech companies—all decisions came to the top ten people in the company, and we drove things back down from there” (quoted in McGirt 2008). Cisco instituted a more decentralized and collaborative management system, with a network of councils and boards entrusted and empowered to launch new businesses, and incentives to encourage executives to work together. Chambers claimed that “these boards and councils have been able to innovate with tremendous speed. Fifteen minutes and one week to get a [business] plan that used to take six months” (ibid.). However, over time, the structure became sclerotic and, beginning in 2009, Cisco reduced the number of councils from twelve to three, while dissolving the associated boards, in a renewed push to speed up decision making (Clark and Tibken, 2011).

Similarly, Pixar studios replaced the traditional isolated studio development department with small “incubation teams” of creative staff who work with a director to refine a film idea to the point where it can be pitched to the studio’s senior filmmakers (Catmull, 2008). This process keeps the creative personnel in charge and vets the problem-solving and social dynamics of the core team should the idea move to the next stage.

The point here is a simple one: in fast-paced complex environments where there is heterogeneity in customer needs and the focus is on creative activity and/or technological innovation, it is simply impossible to achieve the necessary flexibility and responsiveness with a command-and-control organizational structure. Moreover, with a highly talented workforce, excessive centralization can shut down local initiatives.

The above admonitions are not meant to imply that top management should not guide and coordinate innovative activities. In fact, there are certain types of innovation—particularly “systemic” innovation (Teece, 1984)—where close coordination of different groups is required because the parts are so deeply interdependent.

Managers of innovative enterprises must learn to lead without the authority that comes from a position in an organization chart or the ‘C’ designation in their title. This imposes new challenges for some companies and some individuals, but it is the way of the future in such contexts. The challenge is to connect individual initiatives to the overall corporate strategy without building an expensive and initiative-sapping hierarchy.

In some settings, it may even be desirable to invert the traditional hierarchy in order to create the organizational structures in which professionals can perform to their potential (Quinn et al., 1996). With an inverted hierarchy, the job of the manager is to provide support by creating incentive alignment and ensuring resource availability. The experts may even take responsibility for determining executive wages.

In purely creative environments, it is indeed the highly skilled experts that hire “bosses” rather than the other way around. The Hollywood agency model for creative talent was an early manifestation. As explained by Albert and Bradley (1997), the stars themselves, beginning with Newman, Streisand, and Poitier, broke away from the studios

to create their own production company, First Artists, allowing leading actors to control their professional environment and lives. The artists put a professional manager in place, but the manager's mandate was to effectuate the artist's view of how films should be produced.

University faculties have some similar attributes. The faculty arguably hires their Dean since the Dean generally serves at the sufferance of the faculty, at least in some of the major research universities on the west coast of the United States. The university requires the discharge of teaching, research, and service obligations by faculty, but allows faculty members considerable discretion as to whether and when tasks (other than class meetings) are performed.

Professional services organizations in the legal, medical, and other fields exhibit similar characteristics. In short, creative and highly skilled knowledge workers, be they scientists, engineers, medical doctors, professors, or economists, desire high autonomy and can be self motivated and self-directed because of their deep expertise.

Implemented properly, the distributed leadership approach is not an abdication of managerial responsibility. It is just the opposite. The executive leadership team sets strategy and goals and must retain credibility with its experts as well as being answerable to the board and to stakeholders.

While creative activities need to be organized in a distributed/decentralized way, there are operational activities that should not be managed in this way. The accounting, finance, and treasury functions are obvious examples. The management of intellectual property at a company with numerous valuable patents may also benefit from being managed centrally.

B. Managing collaboration

Because experts are increasingly specialized, interaction among people from diverse disciplines or functional groups is almost always required to solve complex problems. In professional services firms, project-specific teams may be the dominant organizational mode for nearly all activities (Larsen, 2001).

An enterprise can hire the brightest, most creative people, but it is only through successfully fostering collaboration, sharing of information, and the use of networks inside and outside the enterprise that their creative potential will be released (Subramaniam and Youndt, 2005). The development of new business services, for example, frequently involves collaboration with suppliers and customers (Love et al., 2011). Team members external to the firm must be assessed and managed almost as carefully as the firm's own employees (Bettencourt et al., 2002).

In his study of the development of the transistor, Nelson (1962) notes that teamwork in a creative context is likely to differ from traditional collaboration aimed at a fixed goal. In the transistor project, teamwork

meant interaction and mutual stimulation and help... several people outside the team also interacted in an important way... teamwork...did not mean a closely directed project...The project was marked by flexibility—by the ability to shift directions and by the rather rapid focusing of attention by several people on problems and phenomena unearthed by others. (p. 578)

It does not follow that every analytical and creative activity is appropriately organized in teams. Indeed, there is a great deal about traditional teams that involve

hidden and unnecessary costs. When team requirements are too heavy, decision cycles lengthen, expenses mount, and the organization adopts an inward focus.

Put differently, one cannot simply assume that more is better when it comes to collaboration. Consensus and participatory leadership isn't always a good thing, particularly when the issues are complex and there is considerable asymmetry in the distribution of talents on the team. The right voices need to be heard.

Unproductive collaboration can be more dangerous than missed opportunities for collaboration. Forced teaming often leads to excessive consensus building, slow decision making, and the wasting of time and money.

Constructing project teams is itself an important competence (Larsen, 2001). Teams should be kept as small and intimate as possible. And project groups that complete their task or run into "blind alleys" should disband so that the mix of talents are ready to be reconfigured as needed to meet future demands. Assigning the wrong mix of people to a project "because they're used to working together" is a path to failure.

In principle, the outcome from a cross-functional team can exceed the capabilities of its best individual members (Larson, 2007). However, if not managed properly, the bringing together of specialists from different parts of the organization can impede innovation (Ancona and Caldwell, 1992). Team members may be too tied to their normal functions or disciplines or be mutually mistrustful.

There are numerous other ways that teams go astray. These range from unproductive conflict that leads to indecision to peer pressure that leads to a flawed consensus.

Groups that encourage the authentic expression of minority opinions tend to make higher quality decisions (Maier, 1970; Nemeth, 2012). Avoiding all conflict often results in poor outcomes (Tjosvold, 1985). Emotional conflict, however, is more likely to have a negative effect than is substantive conflict over solutions to task-related problems (Pelled et al., 1999). Conflict is most likely to contribute to high-quality decisions when trust is high, i.e., when members don't suspect anyone on the team of trying to score points at the others' expense (Dooley and Fryxell, 1999).

Dougherty (1992) suggests that the interaction and collaboration necessary for innovation in cross-functional teams is best brought out by shared learning activities, such as focus groups and user visits. Such shared activities also promote group cohesiveness, which has also been shown to contribute to higher performance by R&D project teams (Keller, 1986).

Group leaders can avoid suppressing healthy disagreement (based on the issues, not on the people, involved) by not expressing their positions too early in the process (Janis, 1972). Openness should be encouraged by not dismissing any idea too quickly.

Yet it is vital to have leadership, at the team level or higher, that knows which ideas can be rejected. A key role of entrepreneurial managers, after enunciating a vision, is to permit experimentation and search, then support promising paths and close down foolish ones.

An added wrinkle is that teams are increasingly spread across organizational boundaries and/or large distances. This is increasingly true for innovation, as large and small companies have begun to tap into pools of science and engineering talent in industrializing economies. The autonomy and trust necessary for managing experts are

also appropriate in the “virtual team” context, where continuous direct leadership may not be possible due to time zone differences. To overcome the social remoteness of distance, special measures, such as a project kick-off meeting that brings everyone to a single location for a few days, must be devised to at least partially formalize the process of fostering mutual support with a shared purpose (Siebdrat et al., 2009).

While physical distance clearly forces the use of fully virtual teams, virtuality is actually a matter of degree since all teams, even those whose members are co-located, will employ some forms of computer-mediated communication. There is still much work to be done regarding the performance effect of virtuality, but one consistent finding is that virtual teams require more time to complete tasks than face-to-face teams, so they may not be suitable for the most urgent projects (Martins et al., 2004).

Whether team members are dispersed or co-located, their work must be tied to the overall strategy of the business (Wheelwright and Clark, 1992). Management of the team needs to tread the line between preventing the natural tension and creativity of innovation from descending into chaos and constraining the team by defining the goals and strategy linkage so narrowly that real innovation is impossible. Takeuchi and Nonaka (1986) call this “subtle control,” where the monitoring function leads to intervention (e.g., eliminating a team member) only when absolutely necessary.

The goals of a team can be furthered by the presence of a “heavyweight” project manager who has both credibility within the team and power/prestige in the organization as a whole (Clark et al., 1987). The prestige is important for ensuring the team the necessary resources and room to maneuver, and is also important for gaining the project manager the respect and cooperation of the *literati* and *numerati* on the team.

In some special cases, when the stakes are high, or the deadlines too close, an organization may assemble a team consisting exclusively of its most able experts. The management requirements in this case are somewhat different from more traditional teams because experts' experts are typically used to being in the leadership position themselves. It may be helpful to provide some extra initial structure to foster collaboration, such as breaking into smaller groups or even pairs that can tackle segments of the overall challenge in parallel.

The goal in such project groups, or "virtuoso teams" (Fischer and Boynton, 2005), is not accommodation and harmony; rather, the aim is to achieve excellence by unleashing individual creativity. A higher level of (topic-related) conflict is to be expected and is bounded only by the common goal and deadline. The team leader will need to be able to massage large egos without seeming patronizing.

Table 1 summarizes some of the differences between traditional and virtuoso teams.

Table 1. Key Differences Between Traditional Teams and Virtuoso Teams

Team Characteristics	Traditional Teams	Virtuoso Teams
Membership	Members chosen based on who has available time.	Members chosen based on expertise.
Culture	Collective	Collective and individual.
Focus	Tight project management. On time and on budget more important than content.	Ideas, understanding, and breakthrough thinking emphasized.
Target	Conventional output	Breakthrough output
Intensity	High/Medium	High
Stakes	Low/Medium	High

Source: Drawn from Fischer and Boynton (2005).

V. Knowledge leaders: entrepreneurial managers

The knowledge work of the enterprise, including its creative talent and experts, must be organized and directed by managers. And in their most important, entrepreneurial role, managers are essential to the exercise of a firm's dynamic capabilities (Augier and Teece, 2009).

Entrepreneurial managers can be “members” of the numerati or literati, but it is by no means the case that they must be. And, like the numerati/literati, entrepreneurial managers can be “grown” internally or brought in from the outside. In the case of current employees identified as having the potential for management advancement, Martin and Schmidt (2010) recommend sharing future strategies and welcoming feedback. This

shows them that they are being groomed and helps to establish a collaborative atmosphere.

Much like the founders of start-up companies, entrepreneurial managers in established firms assemble and deploy resources in pursuit of fresh opportunities.

Opportunities open constantly in the global economy consumer needs, technological possibilities, and competitor activities are always in flux. As discussed by Teece et al. (1997), the path ahead for some emerging marketplace trajectories is easily recognized. In consumer banking, for example, the shift to digital, paperless transactions has been foreseeable for years. However, many emerging trajectories are hard to discern. For instance, in media distribution, it is not yet clear when, or even if, consumers will replace broadcast sources with on-demand options.

Entrepreneurial functions are quite different from those of the ordinary manager. The ordinary manager oversees the ongoing efficiency of established processes: that schedules are met and contracts honored, that quality and productivity improve, and that the business model is constantly tuned. Although there are creative aspects to accomplishing these tasks, managing the operations of an ongoing business is comparatively straightforward.

Entrepreneurial managers excel at the scanning, learning, creative, and interpretive activity needed to sense (and later seize) new technological and market opportunities. The requisite abilities are not uniformly distributed amongst individuals. The discovery (or creation) of opportunity requires specific knowledge, creativity, insight into customer decision making, and practical wisdom (Nonaka and Toyama, 2007). It involves interpreting and synthesizing information in whatever form it appears, be it a

chart, a picture, a conversation at a trade show, news of a technological breakthrough, or the angst expressed by a frustrated customer. The entrepreneurial manager will use this to generate or update a conjecture about the likely evolution of technologies, customer needs, and marketplace responses.

Neither the identification nor even the creation of opportunities results spontaneously in successful exploitation. Indeed, many inventions go unexploited for extended periods, and the pioneer in a market may not turn out to be its eventual leader (Teece 1986, 2006).

Once exploitable opportunities are discerned, entrepreneurial managers must also devise a business model (preferably one that cannot readily be imitated) and a strategy for capturing a meaningful share of value that a new product or service will generate (Teece, 2010). In other words, entrepreneurial management requires both creative vision and wily pragmatism from the management team.

The pursuit of new opportunities often entails changes in the organization, which demands a certain leadership style (Bass, 1985). *Transactional* leaders are able to motivate their employees to meet expectations and accomplish set tasks that fall within ordinary capabilities. *Transformational* leaders, on the other hand, know how to inspire and challenge employees in ways that cause them to perform beyond expectations. According to Bass, transformational leadership “is more likely to emerge in times of distress and rapid change” (ibid.: 39). Subsequent research has confirmed that management teams under transformational leaders are more willing to tackle new growth opportunities (Ling et al., 2008).

Although certain individuals may stand out or become the focus of public attention, entrepreneurial management involves a team. The top management team (TMT) consists of those who report directly to the CEO. Managers at lower levels of large organizations may also play an entrepreneurial role.

The TMT tackles highly complex issues and bears responsibility for the future of the organization. Among other responsibilities, the TMT sets the strategy for the organization and oversees its implementation. When the TMT performs poorly together, the result is likely to be organizational decline (Hambrick, 1994).

A well-integrated TMT, in which members share openly and truly work together on strategic issues, has been shown to facilitate the pursuit of new concepts while not losing sight of current operations, so-called organizational ambidexterity (Lubatkin et al., 2006). Many professional services firms suffer from the opposite of ambidexterity because a single-minded emphasis on billable hours crowds out opportunities to renew the knowledge base and explore new possibilities (Jensen et al., 2010).

VI. Conclusion

Knowledge creation in the enterprise can provide a foundation for success. The process requires employees, particularly experts, to be appropriately managed. In turn, leveraging knowledge into profitability requires managers who take an entrepreneurial approach to market opportunities.

Expert talent has become indispensable for solving problems, delivering service, developing products, and making decisions in today's hypercompetitive global economy. The ideal is to hire and/or promote the best people, provide them a transparent pay-for-

performance package, find managers with sufficient skill and credibility to guide their work, then step back and let them work.

Traditional hierarchical approaches to managing the literati and numerati are unlikely to bring out their best. Narrow-band compensation systems are also unlikely to attract and retain the most-skilled experts.

A growing number of organizations are finding ways to break the shackles of rigid HR systems in order to create a space for experts to feel comfortable and to be productive. To do otherwise risks a downward spiral of uncompetitive knowledge generation and erosion of expertise.

The proposed management model constitutes a complete knowledge-based perspective on the enterprise. Table 2 contrasts this Knowledge Model (right-hand column) with the characteristics of the archetypal Industrial Model that still characterize too many large organizations.

But knowledge alone does not create competitive advantage. The knowledge must be deployed by entrepreneurial managers with a deep understanding of the organization's capabilities and the market's opportunities. Strong dynamic capabilities in the service of good strategy can deliver long-term profitability and growth.

Table 2. Contrasting Management Models of the Business Enterprise

Organizational Characteristics	Industrial Model	Knowledge Model (for literati and numerati)
Hierarchy	Deep	Shallow
Leadership	Centralized	Distributed
Work	Segmented	Collaborative
People Viewed As	Cost	Asset
Basis of Control	Authority	Influence and Example
Assumptions about Individuals	Opportunistic	Honorable
Financial Incentives	Base Salary + Discretionary Bonus	Metrics-Based Compensation; Limited Discretion

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