

The Pragmatic Theory of the Firm

by Bartley J. Madden*



In 1992, Alfred Chandler wrote:

*I am convinced that the unit of analysis must be the firm, rather than transactions or contractual relations entered into by the firm. Only by focusing on the firm can microeconomics theory explain why this legal, contracting, transacting entity has been the instrument in capitalist economics for carrying out the processes of production and distribution, for increasing productivity, and for propelling economic growth and transformation.***

It is difficult to disagree with Chandler. The firm is the crux of a capitalist economy. Take away the firm and you take away growth, investment, value creation, and dynamism. Yet, neoclassical economics has continued to neglect the firm's main activity—running a business.¹ Various theories of the firm have emerged that either emphasize what the developers consider particularly important to a firm's long-term performance or focus on organizational issues, such as the assignment of decision rights and design of incentives, and the optimal integration of the value chain.²

The Pragmatic Theory of the Firm

The pragmatic theory begins with a statement of the firm's purpose and treats the firm as a holistic system. The theory

accordingly views all components as interrelated, rather than analyzing each component separately and in isolation, as has been customary. The theory then focuses on the firm's knowledge-building proficiency as the primary intangible asset for achieving the firm's purpose. The life-cycle, financial-performance framework is used to illustrate the practical benefits of the pragmatic theory, especially improved decision-making by management. The pragmatic theory is expected to encourage new and more fruitful research programs on the workings of the firm, while solidifying the firm as the fundamental unit of analysis for economic progress.³

The key components of the firm, as can be seen in Figure 1, are knowledge-building proficiency, work, innovation, resource allocation, and firm risk. The system's financial results are evaluated in the context of the life-cycle framework, including competitive fade and shareholder returns. We could have drawn Figure 1 with spaghetti-like lines connecting each of the boxes. Though visually less attractive, this picture would more accurately reflect the complex, networked nature of the business firm. The pragmatic theory of the firm fosters insights by avoiding oversimplifications and establishing new holistic connections.

Gaining clarity about the firm's purpose is of utmost importance not only for managing the firm but also for positioning the firm as the primary means, at least in capitalist societies, to innovate and achieve progress that lifts all boats. Furthermore, I argue that a firm's knowledge-building profi-

*The author appreciates the useful comments from Don Chew, Bryant Matthews, and Jack Reardon.

**Alfred D. Chandler, "Organizational Capabilities and the Economic History of the Industrial Enterprise," *Journal of Economic Perspectives* 6(3) 1992, 79-100.

1 Ronald Coase, "The Nature of the Firm: Origin, Meaning, Influence," *Journal of Law, Economics & Organization* 4(1) 1988: 3-47.

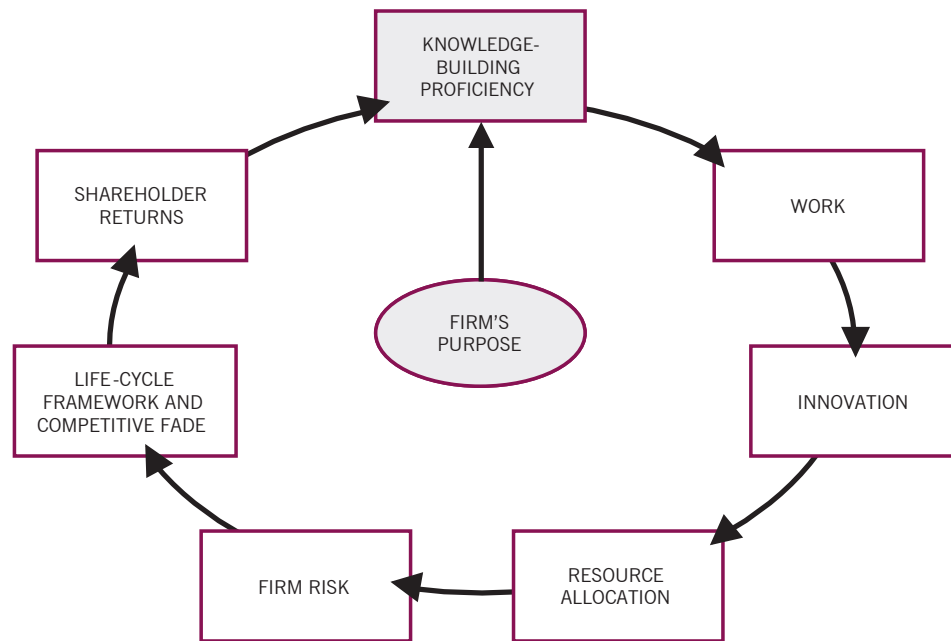
2 Ronald Coase, "The Nature of the Firm" *Economica* 4(16) 1937: 386-405; Edith Penrose, *The Theory of the Firm* (Oxford: Oxford University Press, 1959); Richard M. Cyert and James G. March, *A Behavioral Theory of the Firm* (Englewood Cliffs, NJ: Prentice Hall, 1963); Michael C. Jensen and William H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure" *Journal of Financial Economics* 3(4) 1976: 305-360; Oliver E. Williamson, "The Economics of Organizations: The Transaction Cost Approach" *American Journal of Sociology* 87(3) 1981: 548-577; Richard R. Nelson and Sidney G. Winter, *An Evolutionary Theory of Economic Change* (Cambridge, MA: Harvard University Press, 1982); Sanford Grossman and Oliver Hart, "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration," *Journal of Political Economy* 94(4) 1986: 691-719; Jay B. Barney, "Is the Resource-Based 'View' a Useful Perspective for Strategic Management Research? Yes," *Academy of Management Review* 26(1) 2001: 41-56; Bart Nooteboom, *A Cognitive Theory of the Firm: Learning, Governance and Dynamic Capabilities* (Northampton, MA: Edward Elgar, 2009); David J. Teece, "Knowledge Assets, Capabilities, and the Theory of the Firm," Chapter 23 in Mark Easterly-Smith and Marjorie A. Lyles, eds. *Handbook of Organizational Learning and Knowledge Management* (Hoboken, NJ: John Wiley & Sons, 2011).

3 Bartley J. Madden, *Value Creation Principles: The Pragmatic Theory of the Firm Begins with Purpose and Ends with Sustainable Capitalism* (Hoboken, NJ: John Wiley & Sons, 2020).

Figure 1

The Firm as a Holistic System*

The Pragmatic Theory of the Firm Emphasizes Components of the Firm as a Holistic System



*The source for all the figures in this article is my earlier cited book, *Value Creation Principles: The Pragmatic Theory of the Firm Begins with Purpose and Ends with Sustainable Capitalism*.

ciency relative to its competitors is the primary determinant of a firm's long-term performance.

Capabilities that benefit a firm today may be much less valuable in the future. How often do we hear that capability X is the key to a firm's competitive advantage? Nevertheless, the focus should be on improving capability X over time. Such continuous improvement then circles back to a firm's knowledge-building proficiency, which requires people at all levels of the firm to have a commitment to, and even passion for, dealing with uncertainty, solving problems, and participating in the development and commercialization of breakthrough innovations.

In the remainder of this article, I will explain how and why the pragmatic theory is more useful than other theories of the firm.⁴

The Firm's Purpose

The purpose of the firm can be decomposed into four mutually reinforcing goals:⁵

4 Though I discuss work, innovation, and resource allocation at length in my cited 2020 book, I do not do so in this article.

5 Bartley J. Madden, "Management's Key Responsibility," *Journal of Applied Corporate Finance* 30(3) 2018: 27-35.

- *Communicating a vision* that can inspire and motivate employees to work for a firm that is committed to behaving ethically and making the world a better place.

- *Surviving and Prospering* through continual gains in efficiency and sustained innovation, which depend on a firm's knowledge-building proficiency. Importantly, nothing works long term if the firm fails to earn at least the cost of capital.

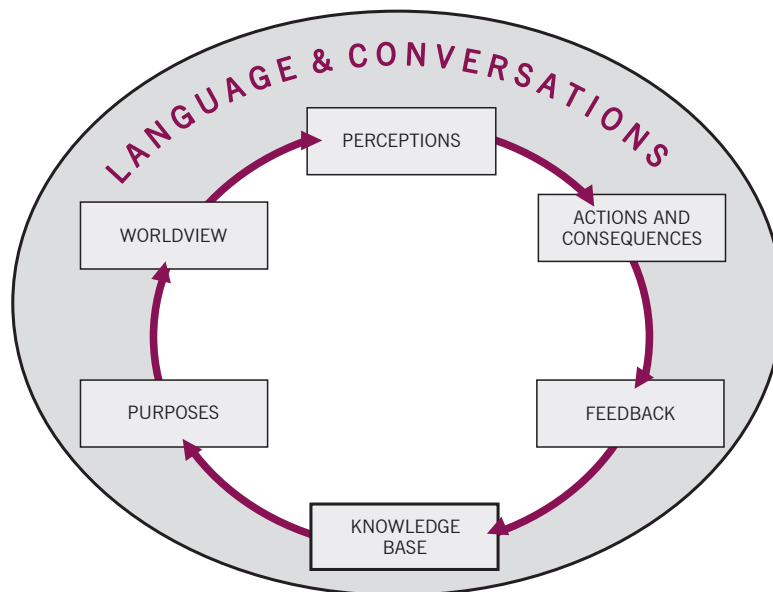
- Working continuously to sustain *win-win relationships* with all the firm's stakeholders.

- *Taking care of future generations*. Management needs a genuine commitment to the sustainability of the environment, with particular attention to the design of products and manufacturing processes to minimize waste and pollution, which again depends on the firm's knowledge-building proficiency.

The four-part purpose addresses the needs of all stakeholders. It answers the question of why employees should be genuinely enthusiastic about their jobs. It makes palpable the need for a cost-of-capital guidepost so that the firm can survive and prosper. In so doing, it provides a logical and comprehensive framework for dealing with complex issues such as expenditure decisions for R&D and manufacturing capacity, and decisions about new employee benefits and local

Figure 2

The Knowledge-Building Loop



community programs so that both the firm and society can get the most out of limited resources.

Knowledge Building

As previously noted, the pragmatic theory identifies the firm's knowledge-building proficiency as the primary determinant of the firm's long-term performance. To be sure, most researchers who support a knowledge-based view focus on groups, business units, or the entire firm. My preference is to focus on the individual. Robert Grant, an early proponent of the knowledge-based view, argued: "The emphasis upon the role of the individual as the primary actor in knowledge creation and the principal repository of knowledge, I believe, is essential to piercing the veil of organizational knowledge and clarifying the role of organizations in the creation and application of knowledge."⁶

When knowledge building becomes an integral part of every employee's job, both job satisfaction and retention of key employees improves.⁷ Such a culture unleashes creativity and motivates employees to solve problems and create new

opportunities by discovering obsolete assumptions and unraveling root causes. A knowledge-building loop like the one illustrated in Figure 2 emphasizes the components required to build knowledge, and especially, the critical role of one's worldview, assumptions, and language.⁸ Attention to how we build knowledge offers insights into improving business performance, including the performance of top management and the board of directors. Rita McGrath writes as follows about a lack of imagination that leads to unquestioned acceptance of key business assumptions:

*Business inflection points undermine the very assumptions on which a business is based and which have come to be taken as "facts" by most decision-makers. It is often difficult for leaders to imagine a different world. It is this failure of imagination that so often leads to strategic surprise ... It is crucial ... that data that challenge embedded orthodoxies be presented along with information that supports the common view. Otherwise ... people will continue to do business in the echo chamber of their existing assumptions.*⁹

6 Robert M. Grant, "Toward a Knowledge-Based Theory of the Firm." *Strategic Management Journal* 17 (Winter Special Issue) 1996: 109-122.

7 Mark C. Ubelhart. "An Economic View of the Impact of Human Capital on Firm Performance and Valuation." in Rawley Thomas and Benton E. Gup Eds. *The Valuation Handbook: Valuation Techniques from Today's Top Practitioners* (Hoboken, NJ: John Wiley & Sons, 2010) pp. 508-524.

8 Bartley J. Madden, "Management's Worldview: Four Critical Points about Reality, Language, and Knowledge Building," *Journal of Organizational Computing and Electronic Commerce* 22(4) 2012: 334-346.

9 Rita McGrath, *Seeing Around Corners: How to Spot Inflection Points in Business* (Boston: Houghton Mifflin Harcourt, 2019) pp. 51-52 and 56).

We go through life traversing a knowledge-building loop while continuously learning which actions help best to achieve our purposes. The components of Figure 2 serve as guideposts that help audit how we know what we think we know. The knowledge base contains assumptions of varying degrees of reliability. One's worldview represents ideas and beliefs through which we interpret and interact with the world. A worldview that favors a deeper understanding of causality and nonlinear system complexities improves one's knowledge base, leading to more efficacious actions that produce desired consequences. Brain scientists affirm that our perceptions are based on memories that facilitate predictions via analogy to the past.¹⁰ We see what our brains tell us to see.¹¹ Especially important is orchestrating feedback that can overcome our automatic reliance on the past and reveal obsolete assumptions earlier than otherwise.

The preeminent role of language and conversations shown in Figure 2 can be attributed to its pervasive influence throughout the knowledge-building process. Language itself plays a major role in camouflaging assumptions while greatly simplifying the world.¹² One key insight from the knowledge-building loop is the importance of continuous awareness of the need for constructive skepticism about strongly held assumptions that influence our perceptions and our actions. Scrutiny of the language we use can help discover the root cause of problems.

A classic example involves the goal of *minimize accounting costs* for operation A that feeds material to B along a manufacturing line. The hidden assumption in the italicized words is that A is independent of B. However, if B is the bottleneck (key constraint) in the manufacturing line, then the installation of a faster machine at A will reduce A's accounting costs but worsen B's situation and degrade the overall system performance.¹³

Keep in mind that behavior within the firm is influenced by performance measurements based on our Old Economy

10 Chris Firth, *Making Up the Mind: How the Brain Creates Our Mental World* (Hoboken, NJ: John Wiley & Sons, 2007).

11 For insights about the pioneering work of John Dewey and Adelbert Ames Jr. concerning our participation in shaping what we experience as reality, see Bartley J. Madden, "A Transactional Approach to Economic Research," *Journal of Socio-Economics* 20(1) 1991: 57-71. This article includes a criticism of Milton Friedman's methodology of positive economics. Both the article and Friedman's response are available at <http://LearningWhatWorks.com/news.htm>. For a comprehensive argument that behavioral economists and cognitive psychologists have underappreciated how individuals participate in creating their perceptions, see Teppo Felin, Jan Koenderink, and Joachim I. Krueger. "Rationality, Perception, and the All-Seeing Eye," *Psychon Bull Rev* published online: 7 December 2016.

12 Lera Boroditsky, "How Language Shapes Thought: The languages we speak affect our perceptions of the world," *Scientific American*, February, 2012. pp. 62-65.

13 James F. Cox III and John G. Schleier, Jr. eds. *Theory of Constraints Handbook* (New York: McGraw-Hill, 2010).

accounting system rooted in tangible assets. Management attention to improving the performance of intangible assets should accelerate as our language improves for talking about, and measuring, intangibles including knowledge-building skills. This is not an abstract point. Improved problem-solving entails fast and effective traversing of the knowledge-building loop.

A key component of this loop is perceptions. Consider how frequently a business problem is discussed and a solution devised based solely on perceptions derived from accounting data in a written report. Quite the opposite way of perceiving situations has been adopted by Lean practitioners who have studied the Toyota Production System. They frequently use the Japanese term *gemba*, which is the place where value is created. A *gemba* walk is about observing a process for yourself in order to provide new perceptions and feedback about the reliability of one's assumptions (knowledge base).¹⁴ Better management of human capital (intangible assets) should follow advancements in language. We are in the early stage of the development of a language for intangibles.

Today's cost accounting language promotes local efficiencies and interferes with value stream analyses that focus on all the processes to deliver a final product or service to the customer. Value stream analyses run horizontally, cutting across the firm's many functional silos. We need a new accounting language to evolve that is attuned to optimizing the overall system (firm); facilitates value stream analyses; and treats human capital in general, and knowledge-building proficiency in particular, as performance-driving assets.¹⁵

Consider how language silently guides thinking in conventional market research with categories based on customer demographics and comparison of product features with competing products. Now consider the shift in thinking facilitated by different language in Clayton Christensen's theory of jobs to be done.¹⁶ The core idea is to understand the *job* that customers *hire* the product to do. This way of thinking explains why the popular QuickBooks accounting software, developed by Intuit, dominates the competition even though it offers only a fraction of the features offered by competing software packages and sells at a substantial premium. QuickBooks excels at helping customers easily complete the job they want done, especially avoiding accounting technicalities.

14 Jim Womack, 2nd edition *Gemba Walks* (Cambridge, MA: Lean Enterprise Institute, 2013).

15 Frances A. Kennedy and Sally K. Widener, "A control framework: Insights from evidence on lean accounting," *Management Accounting Research* 19(4) 2008: 301-323.

16 Clayton M. Christensen, Taddy Hall, Karen Dillon, and David S. Duncan, *Competing Against Luck: The Story of Innovation and Customer Choice*. (New York: Harper Business, 2016).

Note the importance of the knowledge-building process to Intuit, the accounting software firm that developed QuickBooks. Intuit has a \$90 billion market value and a stellar long-term performance track record. Former CEO Brad Smith points out:

Job one in creating a culture is building a purpose-driven culture ... At Intuit, our mission is to improve our customers' financial lives so profoundly they can't imagine going back to the old way ... One way leaders can create an action-oriented environment is to match inspiration with rigor, adopting a rapid-experimentation culture. Great ideas are simply hypotheses unless matched with tangible proof they deliver meaningful impact. A rapid experimentation culture cuts through hierarchy (especially if leaders hold their own ideas to the same scrutiny of testing), creating an environment where everyone can innovate, and "debate" turns into "doing."¹⁷

A purpose-driven and rapid-experimentation culture neatly ties into the pragmatic theory. A knowledge-building culture is the "behind-the-scenes" driver of a firm's long-term financial performance, win-win relationships, and taking care of future generations.

One major takeaway from the pragmatic theory is the importance of management's assigning high priority to improving knowledge-building proficiency, on a par with the attention given to improving conventional accounting-based metrics. Management can focus on a process for continual improvement, but still go after immediate big payoffs:

Commission a core-belief identification squad ... calling on a diverse, cross-functional working group to go hunting for the firm's most deeply-held assumptions about itself and the industry in which it operates. The best-functioning squads include a significant share of younger, newer employees, who are less likely to be invested in current orthodoxies. Their efforts are most fruitful when the team is prepared to raise thorny issues and challenge entrenched beliefs, using methods ranging from reality checks—What industry are we in? Who are our customers?—to more provocative explorations: What 10 things would you never hear customers say about our business?¹⁸

Firm Risk

Firm risk is created and amplified by obstacles to achieving the firm's purpose. Firm risk involves not only controls to avoid bad (value destruction) experiences, but also a way of working that

generates opportunities for good (value creation) experiences. Consequently, management and the board need to nurture and sustain a culture that embraces experimentation and the freedom to question key assumptions at all levels of the firm.

Knowledge building and managing firm risk are opposite sides of the same coin. Project risk is typically associated with uncertainty, difficulty in formulating plans and control processes, and potential wide variation in operating results. Knowledge building is similarly associated with the same characteristics leading to experimentation, feedback, and testing the validity of key assumptions. *Build knowledge to better manage firm risk and create long-term value.*

Firm risk offers a complementary view to what is taught in business schools about investor risk. The latter is based on CAPM and the covariance of a firm's stock price with the general market captured as Beta. Firm risk increases (decreases) in lockstep with changes that degrade (improve) the likelihood of achieving the firm's purpose. This perspective comports with David Koenig's approach to corporate governance: "Businesses exist to take risk ... We know that if risk is always seen negatively, we will be making sub-optimal decisions about taking it ... the fear of taking risks is the surest way to realize failure, as our customers will ultimately leave us for better alternatives, or through simply finding little new value in what we do."¹⁹

An increase in firm risk, all else equal, means a greater likelihood for negative surprises as to future financial results. Investors eventually perceive an increase in firm risk and, all else equal, the firm's stock price declines to a level that adequately compensates investors for the increased likelihood of future shortfalls in the firm's financial performance. Striking examples of increased firm risk are the unethical behavior of Enron's top management and Union Carbide's disregard for maintenance and safety leading to more than 10,000 deaths from the explosion at its chemical plant in Bhopal, India in 1984. Firm risk is long-term oriented, rooted in the firm's foundational purpose, and engages broadly with all of the firm's stakeholders. There can be a substantial time lag between a change in firm risk and investor perception. In each of the six years leading up to its bankruptcy at the end of 2001, Enron was named "America's Most Innovative Company" by *Fortune*.

A holistic view of the firm facilitates managing firm risk. In contrast, isolating on just one activity such as innovation with a singular focus on financial gain can easily become counter-productive to value creation. Prior to the 2007-2009 financial crisis, many banks developed "innovative" products

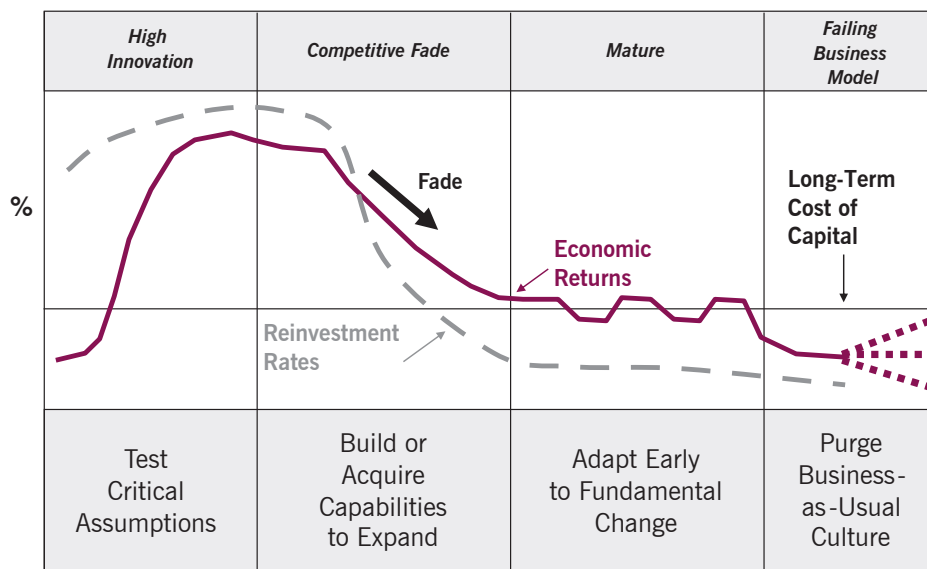
¹⁷ Brad Smith, "The Most Important Job of a CEO" Investors.Intuit.com, accessed March 13, 2016.

¹⁸ Matthew S. Olson, Derek van Bever, and Seth Verry, "When Growth Stalls," *Harvard Business Review* March 86(3) 2008: 50-61.

¹⁹ David R. Koenig, *The Board Member's Guide to Risk* (Northfield, MN: (b)right governance publications, 2020) pp. vii and 65.

Figure 3

The Life-Cycle Framework



that boosted near-term earnings, such as negative amortization loans in which the early monthly payments were less than the interest expense all the while increasing the principal owed. These loans encouraged buyers to speculate on steadily rising homes prices. We know how that worked out.

A holistic view connects these “innovative” loans to the firm’s purpose, specifically win-win partnerships (most importantly with customers). Such a holistic view was embraced by management and the board of BB&T, the best-performing large bank during the financial crisis. The CEO and board chairman John Allison noted that BB&T chose not to offer negative amortization loans for ethical reasons. His explanation of BB&T’s culture resonates with the pragmatic theory’s four-part purpose of the firm:

If you want to have passion and energy in your life, you must have a sense of purpose in your work ... I ask the employees of BB&T: Are you truly making the world a better place to live through your work? Are you really helping your clients achieve economic success and financial security? Are you providing the quality of advice that ensures that they make better decisions?

You should never do anything that you believe will not be in your client’s best interest, even if you can make a profit in the short term ... Life is about creating win-win relationships.²⁰

²⁰ John A. Allison, *The Financial Crisis and the Free Market Cure: Why Pure Capitalism Is the World Economy’s Only Hope* (New York: McGraw-Hill, 2013) p. 241.

What is the primary, quantifiable long-term measure of a company’s success or failure in managing its firm risk? I identify it as *competitive fade*, which will now be explained as part of the life-cycle framework.

Life-Cycle Framework and Competitive Fade

Figure 3 illustrates transitional stages in a firm’s life cycle that capture the dynamics of its profitability and growth in a competitive environment. In the *high-innovation* stage, the key assumptions of the business model need to be validated and the sooner the better. Successful commercialization leads to economic returns well above the cost of capital along with significant asset growth. At the *competitive fade* stage, competitors attempt to duplicate and improve upon the originator’s innovation. The subsequent fade rates depend on competitive advantage. A more descriptive label, however, that reflects the process involved is effectiveness in managing firm risk. This drills into the mindset of top management and the board for blending how the firm develops value-creation projects and, on occasion (hopefully), breakthrough innovations (upside gains), while still maintaining control of business processes (downside losses) in line with the firm’s four-part purpose.

Over the long term, the firm’s economic returns fade toward the cost of capital and its asset growth rates regress toward a growth rate close to the economy’s growth rate. At the *mature* stage where cost-of-capital (average) economic returns are earned, managing firm risk should definitely take center stage.

New investments with the promise of earning value-creating returns above the cost of capital can depress profitability in the near term while taking resources away from existing businesses that are paying the bills. Consequently, overinvestment can easily occur in businesses that offer the perceived comfort of being in control but offer little hope for future economic returns above the cost of capital.²¹ And when the managements and boards of mature firms prove consistently ineffective in managing firm risk, their firm's economic returns fade significantly below the cost of capital. This *failing business model stage* requires purging of a business-as-usual culture and complacency and, most often, down-sizing as part of a restructuring to improve how value is delivered to customers.

To prevent this outcome, management should undertake a number of critical steps shown at the bottom of Figure 3 that are appropriate for each stage of the firm's life-cycle. In terms of managing firm risk, these tasks are especially important both in avoiding the downside (unfavorable fade) and preparing to take advantage of the upside (favorable fade), which reflects the two sides of firm risk.

The long-term fade of a firm's economic returns can typically be explained as a function of its knowledge-building proficiency versus its competitors'.

Keep in mind that successful knowledge building depends upon a keen awareness of context, i.e., the firm's unique internal makeup (intangible human assets and tangible assets) and the changing external environment. Take the case of the biopharma company Illumina, which demonstrated a high level of proficiency in knowledge building (managing firm risk for the upside) as it became the leader in large-scale analysis of genetic variation and function. Illumina did not begin as a startup with best-in-class technology. Rather, Jay Flatley, CEO from 1999 to 2016, was especially skilled in monitoring competitors (see Figure 2) to identify where Illumina's technology was lagging. Flatley responded to these "gaps" through a series of acquisitions, including the critically important acquisition of Solexa in 2007.

How did Flatley orchestrate the scaling up of Illumina to dominate its industry?

One of the really important things we did, early on, was structure our product development process in a way where we could very efficiently run a large number of projects simultaneously. This is what has given us the ability to scale, in size and complexity and number of projects, and still be able to manage

21 Indeed, Dave Denis argues that, based on his survey of relevant studies, corporate overinvestment appears to be a far more pervasive problem than corporate underinvestment. See David J. Denis, "Is Managerial Myopia a Persistent Governance Problem?" *Journal of Applied Corporate Finance* 31(3) 2019: 74-80.

*with a limited number of top executives. That's because of how we empower our teams to go off and do great things. They only have to come back to us under a very fixed set of circumstances. We [in management] can set the strategy and direction and talk about specifications. They can do the execution, which they are really good at.*²²

Life-Cycle Track Records: The Case of John Deere

In 1837, John Deere, a blacksmith, developed an innovative plow for farmers, which led to the firm that bears his name and today provides leading products and services in agriculture, turf, construction, and forestry. Figure 4 displays Deere's 1960-2018 life-cycle track record. In the top panel, Deere's economic returns are calculated as CFROIs, which are adjusted for inflation and other biases (e.g., R&D outlays are capitalized) present in as-reported accounting statements.²³ Inflation adjustments are required in order to more accurately measure levels and trends over long time periods. The benchmark, inflation-adjusted cost of capital of 6% is shown as a horizontal line.²⁴

The top panel of Figure 4 indicates that, from 1960 to the early 2000s, Deere was in the mature life-cycle stage with CFROIs approximating the cost of capital. Over the next two decades, Deere transitioned to earning cyclical but mostly value-creating CFROIs exceeding the cost of capital. The middle panel displays Deere's modest real (inflation-adjusted) asset growth rates over time with occasional spikes due to substantial acquisitions. The bottom panel displays a relative wealth index, i.e., a stock's total return relative to the S&P 500 total return. A rising trend in the relative wealth index is attributable to outperformance; a flat trend reflects market-matching shareholder returns, and a declining trend underperformance of the S&P 500 index. Since 2000, Deere has generated a mostly rising relative wealth index. This outperformance of Deere's stock reflected investors' recognition of a new higher level of CFROIs that exceeded earlier expectations for a continuation of an "Old Economy" mature firm.

From the perspective of firm risk, management successfully evolved from a product-centric business to embrace the digital world with a platform-centric capability. Customers today benefit from Deere's precision agriculture services that

22 Luke Timmerman, "DNA Sequencing Market Will Exceed \$20 Billion, Says Illumina CEO Jay Flatley," *Forbes*, April 29, 2015.

23 For an updated technical explanation of CFROI, see David A. Holland and Bryant A. Matthews, *Beyond Earnings: Applying the HOLT CFROI and Economic Profit Framework* (Hoboken, NJ: John Wiley & Sons, 2018).

24 The inflation-adjusted cost of capital for U.S. public companies generally was estimated at 5.95% in Eugene F. Fama and Kenneth R. French, "The Corporate Cost of Capital and the Return on Corporate Investment" *Journal of Finance* 54(6) 1999: 1939-1967.

Figure 4

Deere & Company 1960 to 2018



Data Source: Credit Suisse HOLT global database

use sensors on their machines and probes in the soil plus data collection and software that increases yield and decreases costs. Such evolution was the result of management’s ability to shift the focus of its resource allocation from business-as-usual

expansion of Old Economy products to early adaptation to the information-based New Economy.

Let’s take a deeper look at Deere’s transition with reference to the pragmatic theory of the firm illustrated previously. In the early 2000s, Deere was like many mature firms providing

operating returns at, or slightly less than, the cost of capital with a culture, or accepted way of doing things, that was deeply engrained in how employees worked. We should not underestimate the high degree of difficulty for management of a large mature firm like Deere to transition to a value-creating firm and sustain economic returns in excess of the cost of capital.²⁵

Referring back to Figure 1, we can take any component such as work or innovation and tell a story about how implementation of lean manufacturing or a heightened focus on strategic R&D contributed to Deere's improved performance. However, there is a particularly important story about Deere's performance and the link to job creation, economic growth, win-win relationships, and taking care of future generations. Telling that story is best facilitated by the pragmatic theory of the firm.

In analyzing any complex system, such as a firm, it makes sense to begin with the purpose of the system and pinpoint what, if any, are the shortfalls in achieving the purpose. Let's focus on "survive and prosper," which is one part of the pragmatic theory's four-part purpose of the firm. Along these lines, it was earlier noted that nothing works long term if the firm fails to earn at least the cost of capital. Of utmost importance is for management and the board to assert that cost-of-capital performance is unacceptable. Acceptance today of earning only the cost of capital is a recipe for earning far less than the cost of capital tomorrow as more performance-oriented competitors increasingly better serve customers.

Basic finance tells us that investing a dollar at the cost of capital yields a present value of a dollar and no new value is created. The firm simply gets bigger. This situation is typically accompanied by lagging knowledge-building proficiency that slows innovation in both process improvements and new products. Complacency with the status quo due to a sizable market share coupled to a large board of "don't rock the boat" directors sets the stage for the firm to transition to the failing business model stage (see Figure 3). Such a transition can typically take from five to 20 years, depending upon the competitive landscape.

Consider two scenarios for a firm such as Deere in the early 2000s with 50,000 employees. A successful transition (favorable fade) scenario can easily result in 75,000 *productive* employees 10 years later, while a decline to a failing business model stage can decimate the original 50,000 jobs.

²⁵ More research is needed focused on management decision-making when faced with a failing business model. See the analysis of Smith Corona's eventual bankruptcy and NCR's successful restructuring in my book cited earlier, *Value Creation Principles: The Pragmatic Theory of the Firm Begins with Purpose and Ends with Sustainable Capitalism*, pp. 194-198.

The 75,000 productive jobs should be compared to the large resources consumed by new startups, many of which fail in order that a few successful ones can eventually create 75,000 jobs. Concerning economic growth and job creation, it is myopic to solely focus in the extreme on startups while ignoring the corporate governance issues with large firms that can easily spiral downward. When the transition to the failing business model stage actually occurs, the lack of effective corporate governance causes a substantial misallocation and waste of resources over the five- to 20-year period until a major restructuring or bankruptcy occurs. Those resources could have been put to much more productive use, including job creation—a classic opportunity cost.

To the benefit of Deere's employees and shareholders, the firm transitioned over two decades via the favorable scenario. The first decade was under the CEO leadership of Robert Lane (2000-2009). Lane clearly understood Deere's position on its life-cycle track record. In a 2004 interview, Lane staked out Deere's fundamental challenge: "Over the past 40 years, there have only been spurts where we've actually even earned our cost of capital."²⁶ He understood that Deere's decentralized structure led to steady production in individual factories, but such *local optimization* turned out to be suboptimal for the firm as a whole operating in a highly cyclical business. Lane focused on upgrading Deere's knowledge-building proficiency, increasing the efficiency of work at all levels of the firm, boosting innovation and disciplined resource allocation.

How was knowledge-building proficiency upgraded in Deere's factories? Recall the emphasis on viewing the firm as a holistic system and avoiding analysis that isolates variables. The upgrading of Deere's knowledge-building proficiency was seen as an integral part of a culture transformation. That Deere's culture in its factories needed a radical overhaul was evident in the signs near the factory entrances enumerating shop rules, including "You will not assault a member of management." A detailed study of this transformation reveals that a culture of confrontation between union employees and factory managers was replaced with a shared vision; trust; respect for employees; win-win relationships (especially with union leaders); lean manufacturing; and training, mentoring, and teamwork to solve problems and reduce product defects. This culture transformation was also instrumental in improving work, innovation, and resource allocation in what has become a more holistic system.²⁷

²⁶ Jeremy Grant, "Deere learns to handle difficult cycles," *Financial Times*, December 8, 2004, p. 30.

²⁷ Fred Stahl, *Worker Leadership: America's Secret Weapon in the Battle for Industrial Competitiveness* (Cambridge, MA: MIT Press, 2013). This book describes the crucial role of Dick Kleine in transforming Deere's culture one factory at a time while also

As a key part of this system, Lane implemented Deere's Shareholder Value Added (SVA) system to bring a quantitative discipline to guide improvements in operations and resource allocation. SVA is calculated as operating profit less an implied charge for capital. In Lane's words:

*We ... hadn't really focused sufficiently on tightly managing our assets. So it was clear to me ... that a simplified form of economic profit—focusing on the left-hand side of the balance sheet—would be just the ticket. My desire was to have something all of our operating people could embrace ... something profound but very straightforward, intuitive, and simple.*²⁸

In his study of Deere's transformation, Mark Moran noted:

*Deere [under Lane's leadership] did several things to manage ... SVA ... Those include a disciplined R&D investment, global expansion, channel consolidation, channel expansion, domestic investment, and disciplined divestitures ... a common language was required to make ... salaried employees literate in what [operating return on assets] and SVA mean, how they are calculated, and how they measure the company's success.*²⁹

From 2010 to 2019, Sam Allen was Deere's CEO. Building on Lane's foundational improvements, the hallmark of Allen's tenure was superb execution, global expansion, and strategic acquisitions. In 2016, which was a down year for Deere's main agricultural business, Allen's shareholder letter highlights not only how Deere operates but also Deere's purpose. In a statement that rings true to the pragmatic theory's purpose of the firm, reinforcing a vision that aims to inspire and motivate employees to uphold the firm's commitment to ethical behavior and making the world a better place, Allen writes:

Our ability to operate profitably throughout the business cycle reflects the advances we've made controlling costs and running our company with a lean slate of productive assets ... SVA is the primary measure used in managing the company and

laying the groundwork for a firmwide, substantially improved production process. The details of how Kleine worked with people to overcome myriad obstacles in making fundamental change provide a model for utilizing human resources to the benefit of all stakeholders.

²⁸ Rodger Boehm, "Leading Change—An Interview with the CEO of Deere & Company," *McKinsey Quarterly*, December 2006.

²⁹ Mark Moran, "Not your grandfather's tractor company—transformation of the John Deere enterprise," *Journal of Enterprise Transformation*, 7(1-2) 2017: 40-73.

making investment decisions ... [strategy] continues to carry the theme of "feet on the ground, eyes on the horizon" and remains focused on meeting the needs of a growing, more affluent, and more urbanized population ... Deere is committed to becoming the industry's undisputed leader in precision agriculture.

Regardless of the changes needed to reach our goals, John Deere's commitment to how we do business is not subject to revision or reconsideration. Our core values—integrity, quality, commitment and innovation—have sustained the loyalty of generations of customers and are a source of inspiration for thousands of talented employees, dealers, and suppliers. Further, these values have supported business performance that has led to solid returns for our investors over many years.

The company's success is rooted in a long-term perspective that lays the economic facts on the table in terms of the firm's life-cycle track record (Figure 4). The pragmatic theory is about long-term value creation and, when applied to Deere, reveals that management made key decisions consistent with the four-part purpose of the firm, which includes win-win relationships with all of the firm's stakeholders. Nevertheless, those who have little interest in finance issues often dismiss SVA as a tool for boosting short-term profits solely for the benefit of shareholders even if it involves closing factories.

But this view is misguided.

Divesting businesses, selling assets that are worth more to someone else, and closing factories that don't justify reinvestment are an integral part of allocating resources to new projects capable of earning at least cost-of-capital returns. This is necessary in order for the firm to survive and prosper over the long term. When a firm sustains a knowledge-building culture, employees continually improve their problem-solving skills so that they can more easily transition to different jobs. If a factory has to be shut down, management has a responsibility to assist employees in securing new jobs, preferably elsewhere in the firm.

Also, the claim that SVA is short-term focused misses the life-cycle perspective and the need to avoid the failing business model stage. Consider how taking care of future generations through environmental sustainability initiatives is impacted when a firm with a failing business model and cash flow problems is forced to cut back on discretionary spending for environmental projects. Deere has sought to avoid this predicament by using some of its robust profits to fund huge R&D innovation designed to supply products and services with advanced technology that optimizes farmers' outputs by minimizing inputs and negative environmen-

tal impacts. This is truly a sustainable path to the benefit of the environment—and farmers' productivity, and of course, people who need nutritious and affordable food. For corporate critics concerned about companies shortchanging stakeholders by elevating shareholder returns, the long-term perspective held out by the pragmatic theory of the firm should be reassuring.

Intangible Assets, Shareholder Returns, and Three Levels of Cause-and-Effect Logic

When non-depreciable expenditures are incurred that provide benefits beyond the accounting period being measured, these expenditures represent intangible assets. Examples include the platforms of Amazon and Netflix for helping customers, lean manufacturing processes, brand-building outlays, employee education and training, and R&D expenditures. Increasingly in the New Economy, intangibles are involved with generating performance that yields, in life-cycle terms, long-term favorable fade and excess positive shareholder returns. Leading Old Economy firms scaled physical (tangible) assets, thereby gaining efficiency and market share. Leading New Economy firms scale up their platforms by connecting more and more users. Uber's business model depends upon avoiding tangible assets, since drivers own their own vehicles, and scaling up both its drivers and the consumers who use the Uber app on their cellphones.

Tangible assets, such as an office building or a fleet of trucks, typically have a value that is not dependent upon, and exists apart from, a firm. Not so for intangible assets that are an integral part of a business system that generates future cash flows. For example, an explicit estimate of a brand value can misleadingly imply a stand-alone value that can be obtained independently of the firm currently using the brand. All else equal, highly skilled management will utilize a brand much better than less-skilled management and generate higher future cash flows. For example, Daimler-Benz acquired control of Chrysler in 1998. The subsequent dismal financial performance reflected a lack of skill by Daimler-Benz management in both combining operations and utilizing the Chrysler brand. Chrysler was sold in 2007. Investors calculating warranted values for a firm based on different future scenarios can account for a brand's contribution to future financial performance via different fade forecasts of economic returns—the more valuable the brand, the more favorable the fade forecast.

So, the economy has changed and complexity has increased with the rise of intangible assets. But ask yourself, what if anything has remained unchanged about economic progress in both the New Economy and the Old Economy?

The answer: value creation depends upon knowledge-building proficiency—the quality of ideas matters much more than growth in business-as-usual products and services. Certainly, the standard of living and job creation increased far more from introducing the automobile than from merely expanding capacity to produce horse-drawn carriages. Ideas were no less important in the Old Economy than they are in the New Economy. Ideas about internal combustion engines led to greater demand for oil reserves and the building of refineries. Such tangible assets had verifiable economic lives that translated into reliable accounting depreciation schedules enabling GAAP income statements and balance sheets to be highly useful for management, investors, institutions involved with credit and debt instruments, and regulators.

Intangible assets involve considerable uncertainty about the magnitude and duration (accounting life) of future benefits. Consequently, accounting rule-makers have been extraordinarily slow in adopting rules for capitalization and amortization of intangibles. In addition, both management and accounting firms lack incentives to put intangibles on the balance sheet. Management wants to avoid having to explain future write-offs of intangibles, possibly due to technological obsolescence. And accounting firms see future liabilities associated with their process for handling hard-to-value assets.³⁰

The stock market doesn't wait for accounting rule-makers to assist with the analysis of intangibles. Considerable empirical research has documented the economically consequential link between intangible assets and stock prices.³¹ Is the pragmatic theory useful for thinking about approaches to empirical research on shareholder returns in the New Economy? To answer that question, let's focus on three levels of cause-and-effect logic as to what drives a firm's market valuation.

Level 1 includes correlation studies, typically using readily available Compustat variables. These variables rarely contain a new insight that links a firm's financial performance and valuation over a firm's life cycle due to limited concern for how the growing importance of intangibles (not part of GAAP accounting) distorts Compustat-derived variables, such as book/price. The thrust of this research is to improve multi-factor models of risk and return. More than 300 factors

30 Baruch Lev, "Ending the Accounting-for-Intangibles Status Quo," *European Accounting Review* 28(1) 2018: 1-24.

31 Anne Wyatt, "What Financial and Non-financial Information on Intangibles Is Value Relevant? A Review of the Evidence," *Accounting and Business Research* 38(3) 2008: 217-256. For a comprehensive review, see Daniel Zeghal and Anis Maaloul, "The Accounting Treatment of Intangibles—A Critical Review of the Literature," *Accounting Forum* 35(4) 2011: 262-274.

have been reported in journal articles, leading to one characterization of this output as the “factor zoo.”³²

Furthermore, Level 1 studies are concerned neither with a deeper understanding of firms through a life-cycle analysis, nor with the importance of a firm’s knowledge-building proficiency. For example, research has documented a negative correlation between excess shareholder returns and asset growth rates. Specifically, low asset growth firms earn higher shareholder returns, on average, than high asset growth firms.³³ However, a more fine-grained analysis would segment the data to ascertain the impact of knowledge-building proficiency in sustaining above-average profitability. Couple that with high asset growth rates and one would expect to observe positive excess returns. This line of thinking suggests that knowledge-building proficiency reflected in securing patents coupled with high asset growth rates may well lead to positive excess returns.³⁴

Compared to Level 1, Level 2 studies display a heightened concern for cause-and-effect logic between a variable and its hypothesized impact on firm performance. If investors fail to appreciate a variable’s importance for improving, or sustaining, a firm’s profitability, they should at least be expected to raise a company’s share value (producing excess positive returns) as the unexpected results are delivered.

Along with R&D expenditures, the next major source of investment that creates intangibles are those items in a firm’s selling, general, and administrative (SG&A) expenditures that produce future benefits beyond the accounting period being measured. Research has demonstrated that decomposing SG&A expenditures into pure operating expenses versus expenses that are properly classified as intangible assets leads to improved predictability of future earnings and shareholder returns.³⁵ SG&A research is closer to practical use for management compared to Level 1 studies. For example, research has shown that after management received long-term equity incentives, corporate spending on those SG&A components tied to future economic benefits increased.³⁶

Environmental, social, and governance (ESG) practices are receiving increased attention from large owners of publicly traded firms. This comports with the pragmatic theory’s emphasis on firm purpose, including win-win relationships and taking care of future generations. A matched sample of firms with high-rated ESG practices versus low-rated showed that the former outperformed the latter over the long term both in terms of shareholder returns and accounting-based performance.³⁷ This result has frequently been replicated in other studies.³⁸ A legitimate concern is that management may spend resources excessively in order to secure a high rating on ESG scorecards and lose sight of the cost-of-capital discipline. The recent rapid growth of investment funds tailored to invest in highly rated ESG firms could contribute to such a misallocation of resources.

Level 3 studies are consistent with the pragmatic theory of the firm’s emphasis on knowledge-building proficiency (high/low) as the fundamental cause of what shows up as long-term, excess (positive/negative) shareholder returns. Lauren Cohen, Karl Diether, and Christopher Malloy used a firm’s track record of success in translating R&D expenditures into sales as a proxy for a firm’s knowledge-building proficiency:

*Our approach is based on the simple idea that some firms are likely to be skilled at certain activities, and some are not, and this skill may be persistent over time. ... We show that ... substantial return predictability exists by exploiting the information in these firm-level track records. We find that a long-short portfolio strategy that takes advantage of the information in past track records yields abnormal returns of 11 percent per annum. ... We show that the firms we classify as high ability based on their past track records also produce tangible results with their research and development efforts. In particular, R&D spending by high ability firms leads to increased numbers of patents, patent citations, and new product innovations by these firms in the future. The same level of R&D investments by low ability firms does not.*³⁹

32 Campbell R. Harvey and Yan Liu, “Lucky Factors,” Available at SSRN: <https://ssrn.com/abstract=2528780>, August 7, 2020.

33 Michael J. Cooper, Huseyin Gulen, and Michael J. Schill, “Asset Growth and the Cross-Section of Stock Returns,” *Journal of Finance* 63(4) 2008: 1609-1651.

34 Praveen Kumar and Dongmei Li, “Capital Investment, Innovative Capacity, and Stock Returns,” *Journal of Finance* 71(5) 2016: 2059-2094.

35 Luminita Enache and Anup Srivastava, “Should Intangible Investments Be Reported Separately or Commingled with Operating Expenses?” *Management Science* 64(7) 2018: 3446-3468. Also, Annete Ptok, Rupinder P. Jindal, and Werner Reinartz, “Selling, General, and Administrative (SG&A) Expense-Based Metrics in Marketing: Conceptual and Measurement Challenges,” *Journal of Academy of Marketing Science* 46(6) 2018: 987-1011.

36 Ragiv Banker, Rong Huang, and Ram Natarajan, “Equity Incentives and Long-Term Value Created by SG&A Expenditures,” *Contemporary Accounting Research* 28(3) 2011: 794-830.

37 Robert G. Eccles, Ionnis Ioannou, and George Serafeim, “The Impact of Corporate Sustainability on Organizational Processes and Performance,” *Management Science* 60(11) 2014: 2835-2857.

38 Gordon L. Clark, Andreas Feiner, and Michael Viehs, *From the Stockholder to the Stakeholder* (Smith School of Enterprise and the Environment and Arabesque Partners, 2015). Also, Gunnar Friede, Timo Busch, and Alexander Bassen, “ESG and Financial Performance: Aggregated Evidence from More Than 2000 Empirical Studies,” *Journal of Sustainable Finance & Investments* 5(4) 2015: 210-233.

39 Lauren Cohen, Karl Diether, and Christopher Malloy, “Misvaluing Innovation,” *Review of Financial Studies* 26(3) 2013: 635-666. Also, for a creative study that investigated the value of knowledge contributed by individuals, see Aaron K. Chatterji and Karl R. Fabrizio, “Does the Market for Ideas Influence the Rate and Direction of Innovative Activity? Evidence from the Medical Device Industry,” *Strategic Management Journal* 37(3) 2016: 447-465.

Here is an important Level 3-type research question concerning firms that implement Lean principles. Why do only approximately 5% to 7% of firms that implement “lean” principles actually sustain superior performance over the long term? A useful, empirically based answer to this question is important not only to investors but most certainly to management.

A researcher working with this question would benefit from the experiences documented by Mark Deluzio, the principal architect of the Danaher Business System (DBS), which propelled Danaher to become the generally acknowledged preeminent “lean” firm in the U.S. In his book, *Flatlined: Why Lean Transformations Fail and What to Do About It*, Deluzio provides insights that are well suited for empirical research as to why Lean transformations fail. Of particular importance to a successful Lean transformation is full-time engagement by top management. Reinforcing the idea that employee education and training is an SG&A expense that should be treated as an intangible asset, Deluzio describes the DBS office that he managed:

At Danaher, we also used the DBS office to train future leaders in our DBS methodology. Presidents and vice presidents, as well as other leaders, came out of their respective roles and worked full-time in the DBS office, anywhere from 6 to 12 months. When they returned to their line or staff role, they led DBS in their line role of their organization with almost a religious fervor. Ultimate career success at Danaher was contingent upon one’s ability to lead and achieve results utilizing the Danaher Business System.⁴⁰

Concluding Thoughts

The pragmatic theory of the firm offers an advantageous way of thinking about corporate purpose and success that can be distilled into four key points:

1. Clarity about the purpose of the firm suggests that maximizing shareholder value is best viewed not as the firm’s purpose, but as the result of the firm successfully achieving its four-part purpose.

2. The pragmatic theory of the firm holistically treats the firm as a system of connected components rooted in the firm’s purpose and utilizes a life-cycle framework. Life-cycle track records make sense of shareholder returns over time. When used to display the long-term performance of individual

business units, life-cycle track records can help management and boards improve their resource allocation decisions.⁴¹

3. The key determinant of the firm’s long-term performance is its knowledge-building proficiency relative to its competitors’.

4. Firm risk consists of obstacles to achieving the firm’s purpose and involves not only controls to avoid bad (value destruction) experiences, but also a way of working that generates opportunities for good (value creation) experiences. Build knowledge to better manage firm risk, achieve favorable fade, and create long-term value.

The ongoing worldwide indictment of capitalism and the related criticism of corporate governance suggests that maximizing shareholder value is both easily misunderstood and ill-suited to gather broad support for the role of business firms in society. The pragmatic theory of the firm responds to this criticism with two main points.

- Human capital is spotlighted as the means to advance the firm’s knowledge-building proficiency which is key to achieving the firm’s four-part purpose—vision, survive and prosper, win-win relationships, and taking care of future generations. This four-part purpose addresses the core concerns of stakeholder capitalism while not neglecting that, for a firm to survive and prosper over the long term, it needs to earn at least the cost of capital.

- The pragmatic theory of the firm lays out an intellectual basis for management and the board to adopt a holistic view of the firm in order to make better value creation decisions to the long-term benefit of all stakeholders. Such decisions are rooted in constructive skepticism about key business assumptions; feedback to facilitate early adaptation to a fast-changing world; and investments in intangible assets that nurture and sustain a knowledge-building culture.

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⁴⁰ Mark C. Deluzio, *Flatlined: Why Lean Transformations Fail and What to Do About It* (New York: Routledge, 2020). The 5% to 7% figure is from the foreword written by Art Byrne, former CEO of Wiremold and an acknowledged Lean expert.

⁴¹ Bartley J. Madden, “For Better Corporate Governance, the Shareholder Value Review,” *Journal of Applied Corporate Finance* 19(1) 2007: 102-114. Also, Mark L. Frigo and Bartley J. Madden, “Strategic Life-Cycle Analysis: The Role of the CFO,” *Strategic Finance*, October 2020, pp. 33-39.

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