

What is the Economic Value of Agile Businesses, Enterprises & Organizations?

Abstract—See <http://bit.ly/2WO6tCu>

The purpose of this article is to investigate the economic value of agile businesses, enterprises, and organizations. Business agility is the ability of businesses, enterprises, and organizations to quickly adapt to—or capitalize upon—existing, emerging, or changing markets, demand, trends, or perturbations for new products and services through lean, agile, flexible, malleable, and elastic leadership, strategies, cultures, operations, contracts, organizational designs, work forces, communications, infrastructures, platforms, processes, tools, technologies, and product and service designs and implementation mediums. While the business value of traditional thinking is rooted in the economics of rigid, top-down long-term capital planning, this has proved far too brittle in the modern age and is now completely irrelevant in today’s extremely competitive, complex, hyper-fragmented, highly-unstable, and grossly unpredictable global marketplace. The only thing certain in today’s global landscape is change, unpredictability, uncertainty, risk, and failure for all but the most adaptive businesses, enterprises, and organizations. The first question to be answered is whether today’s businesses, enterprises, and organizations can survive at all (and how)? The second major question is whether the economic value of business agility is measurable, and if so, what is it? That is, if business agility is not achievable nor measurable, then it must simply be relegated to the junkyard of yet another passing management fad.

1. Introduction

The old, traditional ways of businesses, management, and administrative theory have now been relegated to the libraries, museums, or mausoleums business school lore. They emerged in the eras of industrial revolutions, railroads, manufacturing, scientific management, and the immediate post-World War II Baby Boomer market. Times were great, businesses boasted of 100 year strategic plans, banks funded global manufacturing facilities for decades if not centuries, finances were calculated down to the penny for decades, the markets belonged to a few global monopolies, and customers bought whatever was available to them. However, all of that changed with the sudden Oil Shock of the 1970s, Japanese quickness of the 1980s, World Wide Web (WWW) Boom of the 1990s, Global Wars of the 2000s, and Internet of Things (IOT) of the 2010s. Not to be upstaged by Large Western Dot Coms (Google, Amazon, Apple, Facebook, Twitter, etc.), China successfully unleashed a lab-grown Global Pandemic in the 2020s that

brought worldwide markets to their knees (quite literally). In anticipation of such market crumbling phenomenon, visionary management scientists began exploring new business, enterprise, and organizational models rooted in variety of closely interrelated disciplines such as evolutionary biology, organismic biology, complex adaptive systems, chaos theory, emergence, innovation, new product and service development, operations research, flexible manufacturing, customer or market orientation, lean thinking, and agile methods. The first major installment of this school of thought was Lean Thinking around 1990, which was just the simple Westernization of the Toyota Production System from the 1950s. The second major installment was the emergence of Agile Methods from American computer programmers. The third major installments were Agile Project, Program, and Portfolio Management from American managers. The final major installment was Business Agility as a spinoff of Lean and Agile Portfolio Management, but in of itself was a parallel discipline to Lean Thinking from 1990. That is, American managers coined the term Lean Thinking in 1990, allowed American programmers to hijack and streamline Lean and Agile thinking for Dot Coms, and then reclaimed Business Agility based on the Dot Com business model (as opposed to the TPS rip off from the 1990s). Even Toyota is now renovating TPS with Western Business Agility principles, practices, and tools. The final step was wide market acceptance of Business Agility, codification of Business Agility Reference Models, and, of course, measurements of Business Agility. That is where this article picks up—chronicling some these emerging economic measurements of Business Agility.

2. Literature Review

Business agility is a business, enterprise, or organizational attribute consisting of the flexibility and adaptability to quickly field innovatively new products and services under highly unpredictable, uncertain, dynamic, changing, and even wildly fluctuating market conditions. But, let’s take a step backwards and examine some early models of business, enterprise, and organizational agility from the turn of the century (no, not 1900, but 2000). Although not limited to those cited in Table 1, Shona Brown and Kathleen Eisenhardt certainly blazed a trail with their theory of Structured Chaos and its definition of, “Reacting responsibly to, anticipating, and dictating the pace of change!” Most of these theories were clearly aimed at traditional brick-n-mortar business, enterprises, and organizations—save that of Judo Strategy by Michael Cusumano—clearly aimed at Internet firms.

Table 1 – Early Definitions of Business Agility (from the turn of the century circa 2000)

No	Year	Model	Author	Definition
1	1997	Structured Chaos	Brown	Reacting responsibly to, anticipating, and dictating the pace of change
2	1998	Judo Strategy	Cusumano	Using speed and agility to mitigate effects of a company's competitors
3	1999	Adaptive Enterprise	Haeckel	Ability of large complex organization to systematically adapt to change
4	2000	Agile Organization	Fulmer	Sense making for success by understanding landscape, learning, and leading
5	2001	Good to Great	Collins	Increasing performance standing by disciplined thought, people, and action
6	2001	Response Ability	Dove	Intellectual and physical ability to act upon knowledge for business success
7	2002	Mobile Business	Evans	Confluence of business processes, e-commerce, and wireless communications
8	2003	Agile Business	McCarthy	Common ability to maintain a steady course in the face of economic change
9	2007	Corporate Agility	Grantham	Creating new products and markets faster than competitors by reducing costs
10	2008	Fast Strategy	Dos	Striking with strength and speed through strategy, commitment, and fluidity
11	2009	Business Agility	Hugos	Ability to respond and act quickly to capitalize on new opportunities
12	2009	Motivational Drive	Pink	Strategy of empowering people with autonomy, mastery, and purpose
13	2014	Agility Factor	Worley	Ability to make timely, effective, and sustained organizational changes
14	2014	Agility Advantage	Setili	Seeing and responding to market changes more capably and quickly
15	2015	Holacracy	Robertson	Governance structure for semi-autonomous teams enabling rapid adaptation
16	2015	Agility Shift	Meyer	Competence, capacity, and confidence to learn, adapt, and innovate
17	2015	SEAM	Worley	Ability to make timely, effective, and sustainable organization changes
18	2015	Government Agility	Rico	Adapting to change by reducing scope, outsourcing, and collaboration

Once again, the essence of domestic or global businesses, enterprises, and organizations from the 1700s to the late 1900s was that of being a manufacturing business. That is, immense revenue generating, job creating, and taxable industries were manufacturing firms. They were the drivers of Gross National Product (GNP)—the primary measure of national or international success. Most other industries were special cases or service industries of the manufacturing firms (i.e., banks, insurance companies, healthcare firms, utility monopolies, non-profits, and even local, state, federal, and international government). The software or information technology (IT) industries were also merely amusing little service industries that had no bearing on local, state, or federal revenues—They were considered inconsequential service or “enabler” industries.

Hence, most management and organizational theory focused clearly on the manufacturing firm at the local, state, and federal level and the corporations that ran them. Occasionally, management scientists dealt with special cases such as banks, insurance companies, healthcare, government, non-profits, and, God forbid, software or information technology firms), but not often—All of

these were merely pathological cases of manufacturing firms—Not worthy of serious study. Hence, the Lean Thinking phenomenon of 1990 was clearly aimed at the global automobile industry and closely related manufacturing industries. In 1990, Kim Clark and Takahiro Fujimoto noted the difference in concept to cash among major industrial blocks (i.e., Japan—48 months, U.S. 72 months, and Europe—120 months).

However, what these manufacturing researchers failed to notice was that the software industry was born in 1970, software was mass marketed in the 1980s, and the Internet made it available to the world’s inhabitants in the 1990s. Lean Thinking in the form of Agile Methods was applied to software development from 1995 onwards. Furthermore, Western manufacturers evaporated, and the only Western firms were software and IT firms in the form of a few monolithic Dot Coms. Thus, Agile Methods, Lean Thinking, and Business Agility became synonymous by 2015. Let’s examine some of these emerging definitions of Business Agility highlighting the nearly complete convergence of software, information technology, and global business as the central focus of management theory in the Western Hemisphere.

Table 2 – Emerging Definitions of Business Agility (from the 2010s)

No	Year	Source	Definition
1	2018	Miller	A company's ability to respond to changing conditions
2	2019	Leybourn & Elatta	The ability to adapt to change, learn and pivot, deliver at speed, and thrive in a competitive market
3	2019	Weber	A way for businesses to remain agile when markets fluctuate, as they have a tendency to do
4	2016	Wikipedia	The capability of a business or its components to rapidly respond to a change by adapting to maintain stability
5	2017	Levit	The quality that allows an enterprise to embrace market and operational changes as a matter of routine in order to thrive amidst uncertainty
6	2020	Leffingwell	The ability to compete and thrive in the digital age by quickly responding to market changes and emerging opportunities with innovative business solutions
7	2020	ProductPlan	Applies the principles of agile development to the entire organization, which allows companies to be more responsive to change, hasten the time to market, and reduce costs without sacrificing quality
8	2020	HRZone	The adaptability, flexibility, and balance that allow organizations to respond rapidly to changes in the internal and external environment without losing momentum, vision, or long-term viability
9	2020	Definitions	The ability of a business to adapt rapidly and cost efficiently in response to changes in the business environment by maintaining and adapting goods and services to meet customer demands, adjusting to the changes in a business environment, and taking advantage of human resources
10	2020	Agile Alliance	The ability of an organization to sense changes internally or externally and respond accordingly in order to deliver value to its customers (that describes how an organization operates through embodying a specific type of growth mindset that is very similar to the agile mindset)
11	2017	Denning	A set of managerial practices governed by three themes or laws—The law of obsessing with delighting customers and users, the law of using small cross-functional teams to work on small iterative batches, and the law of organizations functioning as highly-creative entrepreneurial networks
12	2019	Agile Business Consortium	The ability of an organization to: (1) adapt quickly to market changes - internally and externally, (2) respond rapidly and flexibly to customer demands, (3) adapt and lead change in a productive and cost-effective way without compromising quality, and (3) continuously be at a competitive advantage
13	2013	Rouse	A concept whereby organizations seek to approach their operations and resources in a flexible, responsive manner that allows organizations to adjust rapidly to changing market conditions, capitalize on emergent business opportunities, adopt new distribution channels or supply chains and reduce costs or increase revenue streams
14	2019	SolutionsIQ	The ability or emergent property of a business to realize and sustain its full potential in terms of its profits and people, regardless of internal or external environment changes (that enables organizations to innovate and deliver more effectively, thus turning market disruption into competitive advantage, while thriving in complex environments)

There is a subtle but perceptible shift in focus from the definitions of business ability circa 2000 to those centering round 2017. That is, the earlier definitions and models of business agility dealt with surviving market turbulence, like an instructor telling a bronco buster how to stay on the horse without getting bucked off. That is, don't change your (manufacturing) nature, merely learn how to survive inevitable market turbulence by loosening up the interfaces between your components a little bit. Hence, the goal was survival or surviving turbulence.

By 2017, the shift had been made from simple operational resilience or survival, to one of strategic advantage, market dominance, and bludgeoning global competitors to death with a barrage of lightning fast new products and services. In other words, we went from business agility as a defensive shield, to business agility as an offensive weapon. However, in both cases, their definitions of business agility squarely focused on the external attributes of business agility (what) vs. the internal attributes of business agility (how).

3. Framework

From here, we can shift into a well-rounded, holistic definition of business agility, move beyond the external attributes or outcomes of business agility in terms of market defense and offense, and begin to look under the hood and examine its internal components. Business agility is the ability to quickly adapt to—or capitalize upon—existing, emerging, or changing markets, demand, trends, or perturbations for new products and services through lean, agile, flexible, malleable, and elastic leadership, strategies, cultures, operations, contracts, organizational designs, workforces, communications, infrastructures, platforms, processes, tools, technologies, and the product and service designs and implementation mediums themselves. What does this mean, precisely?

It boils down to a holistic top-to-bottom restructuring or reinvention of the 21st Century business, enterprise, and organization. It means we can no longer put lipstick on a 20th Century pig, give lip service to business agility, nor plaster our halls with slogans and empty platitudes to “be more lean and agile.” It begins with the internal mindset, psychology, desire, and behavior at the pinnacle of executive leadership that must penetrate the middle management ranks, permeate its operations, and epitomize its front-line employees. It means to be small, flat, fast, adaptive, inexpensive, creative, market-driven, experimental, egalitarian, loosely networked, informal, entrepreneurial, globally virtual in many circumstances, narrowly focused,

automated, information technology intensive, deeply talented, cooperative, collaborative, emotionally intelligent, visually intensive, conversational, and above-all, apply lean and agile thinking values, principles, and practices for God’s sake!

Let’s stop and think about that for a second. Clearly, this doesn’t describe many firms from the 1700s to the year 2000. And, we’d venture to say, this doesn’t describe many firms in the 21st Century either. One simply can’t hire a single lean and agile guru or consultant(cy) and declare oneself as having business agility. It’s not even enough to have a single lean and agile product, service, project, product, nor product line. What it does mean is that the entire fabric of the organization is lean and agile from the psychology of its executives, middle managers, and employees to the very strategy, infrastructure, and decision-making fabric. One simply can’t paint racing stripes on a battleship and call it a formula one racing car. If you wanna race, you must become a sports car!

Hence, we have developed a model of business agility that begins to permeate all levels of the organization, not just its strategy, culture, nor processes, but the organizational design itself along with its products and services. Strategy begins with the executive functions, Culture includes the people, Process includes Lean Thinking, Product and Service includes designs, Technology includes substance, IT Infrastructure includes communications, Organization denotes size, and Capital Infrastructure includes the facilities themselves. ***This is a fire sale—And, every (traditional) element has gotta go!***

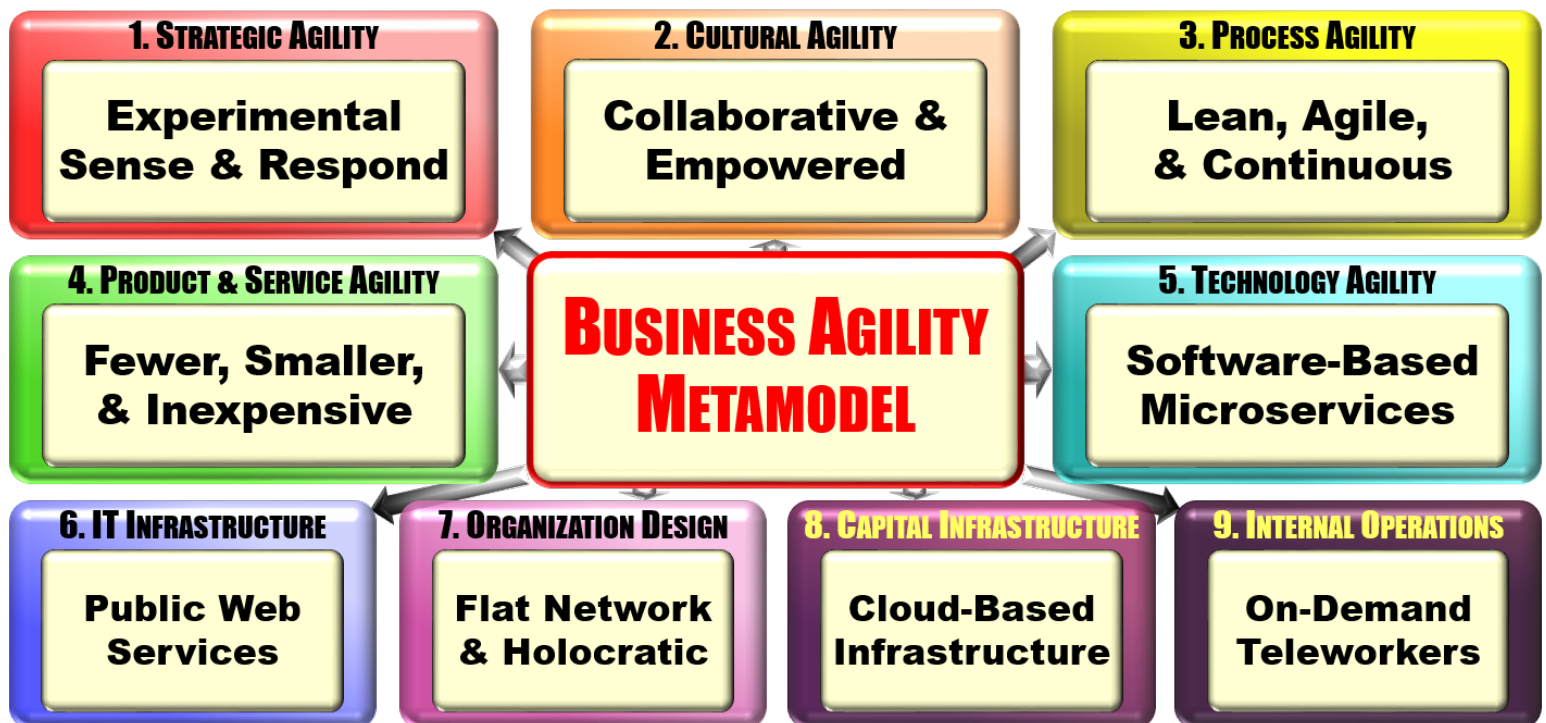
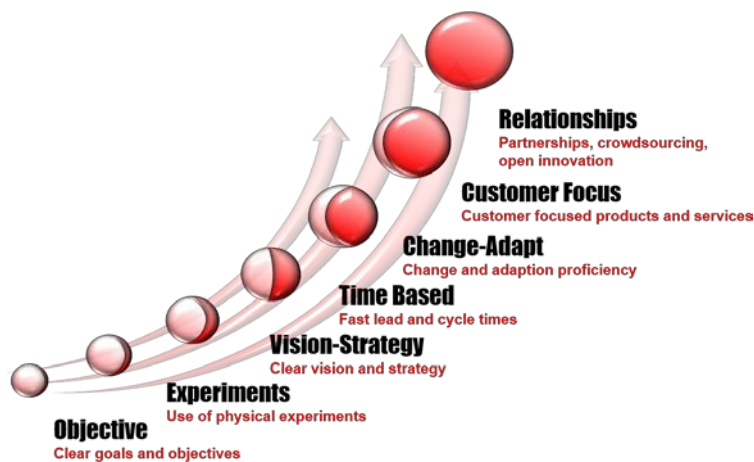


Figure 1 – A Holistic Model of Business Agility— See <http://bit.ly/2ZNYMOt>

3.1 Strategic Agility

At the outset, the notion of strategic agility is a controversial topic within field of business agility. This dates back to the business school debates between the resource-based view of the world and operational capabilities. That is, the resource-based view was the traditional 100-year outlook asserting that an ironclad strategy was more important than operational efficiency. The operational capabilities view held that how an organization achieved its strategy was just as important as the strategy itself. A quick follow-on to this debate, was the entire Lean Thinking movement, focusing on the responsiveness of manufacturing capabilities to changing market conditions. Eventually, this evolved to the point that executives must have flexible strategies that must be adapted to changing market conditions. Hence, for a while, the only thing that mattered to early business agility advocates was strategic and manufacturing flexibility. However, the fluidity of the strategy and its source was never fully discussed. Today, we understand that the strategy must be very fluid, multi-faceted, strictly aligned with market demand, resilient to uncertain conditions, and, oftentimes, solicited from the workforce. More importantly, it should be based on rapid fact-based business experiments by front-line workers themselves.



3.2 Cultural Agility

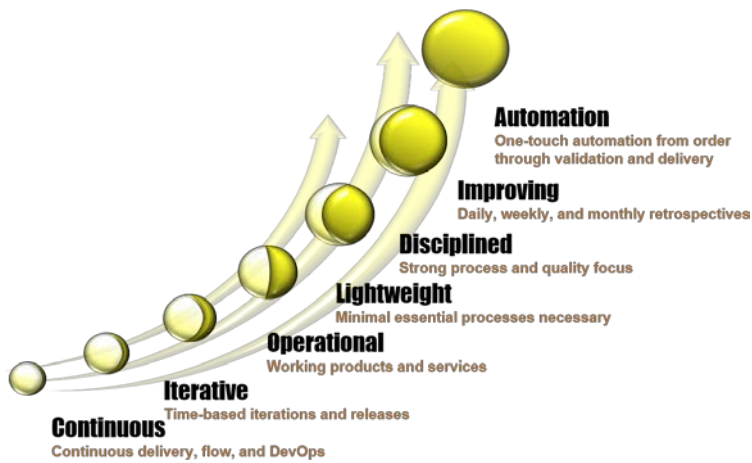
Of course, the organizational psychology or culture must also be as fluid as the strategy. Edgar Schein noted that the top-executive set the tone or culture for organizations, not the workforce. Therefore, cultural agility must begin with the CEO, executives, directors, middle managers, front-line supervisors, and the workforce themselves. Thus, lies the rub, as there are few CEOs that embrace the principles of business agility—Lean and agile thinking. Fix that problem, and the rest of the traditional dominoes will fall in quick succession. Hire a stodgy, traditionally minded CEO, and business agility may never be achieved. Once the leadership challenge has been overcome, then the search for lean-

agile talent can begin, the workforce can be empowered with decentralized decision making, emotional intelligence can replace constant measurement and fear, and continuous improvement can ensue. More importantly, lean and agile thinking principles must be baked into to every stitch in the fabric of organizational culture. Some people don't subscribe to lean and agile thinking, and, quite frankly, others are simply bored.



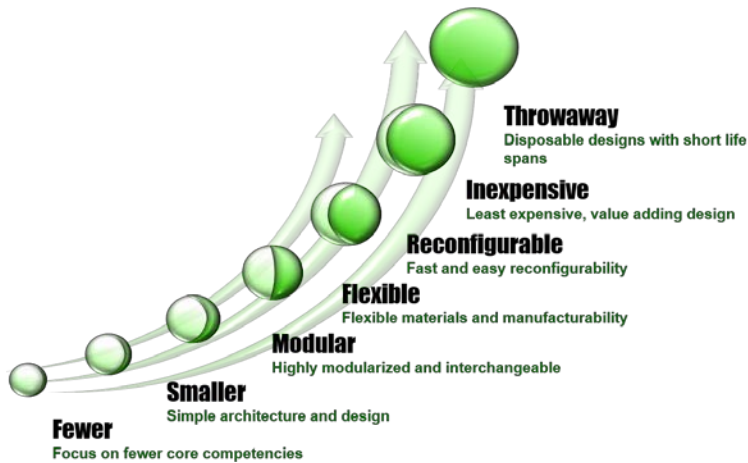
3.3 Process Agility

Again, business agility cannot be achieved without applying lean and agile thinking, values, principles, practices, tools, and oftentimes, lean and agile reference models and frameworks. Many robust lean and agile reference models for business agility are emerging, like the Scaled Agile Framework (SAFe). And, many public and private businesses, enterprises, and organizations were bold enough to adopt or adapt SAFe and other closely related frameworks. However, these bold early adopters were the outliers, as the average organization is allergic to external reference frameworks and models of any shape, size, kind, or form. It's simply the tried and true organizational antibodies of the good ole' Not Invented Here (NIH) Syndrome! Some people are clever enough to adapt business agility frameworks like SAFe to their corporate cultures (i.e., follow its practices, but rename its component parts to sound like they've been internally homegrown). This is not a bad strategy or tactic but must be done with care as internal variations may quickly become obsolete—Because commercial frameworks are constantly changing and innovating. However, the majority of businesses, enterprises, and organizations that undergo business agility transformation are more inclined to simply assemble their own internal frameworks completely from scratch. Again, this has its pros and its cons, but once again, fails to appreciate the investment, wisdom, and engineering laws that are built into commercial frameworks. International standards try resolve these conflicts but typically come far too late to be useful and are often sterile empty shells and useless.



3.4 Product and Service Agility

Okay, so now we've tackled three large chunks of challenges to business agility (i.e., strategy, culture, and processes). But, what about the products and services themselves. Well a key principle of lean and agile thinking is the importance of small batch size, which has been known to mathematicians for at least 70 years. That is, the bigger they are, the harder they fall. Far too many traditional and lean-agile management consultants believe that a single person can swallow the elephant in one fell swoop, rather than eating it one bite at a time. This is a major mistake. It takes a public sector agency about 30 to 50 years and \$100 billion dollars to field a strategic new product or service. That's clearly not eating the elephant one bite at a time regardless of whether lean and agile frameworks are applied. ***In fact, the U.S. government—GAO—is complaining that lean and agile frameworks are ineffective for swallowing elephants, DUH!***

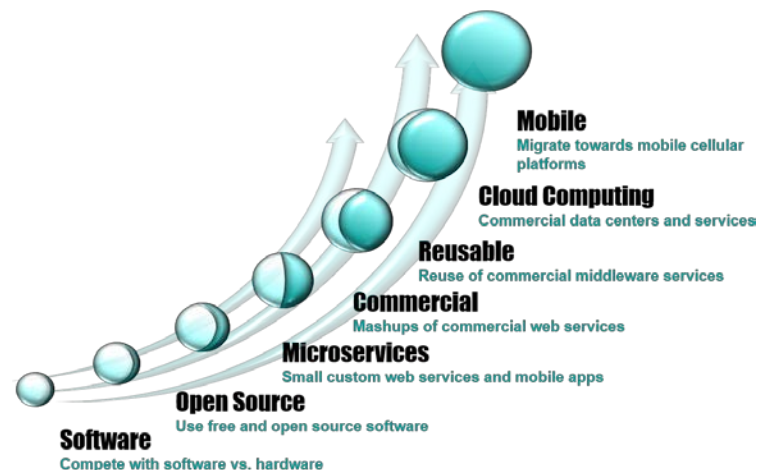


Many commercial firms are no better, and require about 10 years, 1,000 people, and one billion dollars to field a single new product or service. We'll just call this swallowing a baby elephant, which doesn't work very well either with traditional nor lean-agile frameworks. We've now discovered that new products and services must be infinitesimally small (in batch size) and be fielded in hours or no more than a day. These are often

called minimum viable products (MVPs), experiments, or microservices. But, reducing batch size is just one part of the equation, as businesses, enterprises, and organizations must cycle through many MVPs to find the right answer—It takes many licks to get to the center of the Tootsie Roll Tootsie Pop—It's not a one-time event!

3.5 Technology Agility

Part and parcel to the notion or principle of product and service agility is the notion of technology agility. That is, in order to shrink the size of the MVP to the scale of a microservice, do it inexpensively, quickly field it, measure its impact, and rinse and repeat on a tight budget, the medium used to construct the microservice becomes important too. Some people resort to artist's renderings, brochures, paper models, plastic models, graphical wireframes, mockups, prototypes, statistics, analytics, model-based systems engineering, models, simulations, and other proxies of the final product or service. This has its pros and its cons, as it allows 90% of the talent or brainpower to focus on the creative innovation to solve the market or customer problem without having to master a complex, labor-intensive mediums like an electronic circuit or a million lines of Java code. Part of this is procedural and the technology may be a process or product representation. For instance, Design Sprints have emerged to field a mockup of an MVP, gain customer feedback, and converge on an MVP in only five business days. Another variation of this is the 5x5 X-Team approach to business experimentation (i.e., construct five, \$5,000 business experiments in only five days to converge on a solution). However, when it comes down to it, software is the most malleable medium ever created and today's Dot Coms can now conduct one to ten thousand A/B business experiments in a day (compared to one business experiment with Design Sprints or five business experiments with 5x5 X-Teams. So, in the end, using a highly flexible lean and agile medium like software really does make a big difference to business agility (i.e., web pages, microservices, mobile apps, etc.).



3.6 IT Infrastructure Agility

At this point, we're pretty deep into the philosophy, theory, values, principles, practices, tools, and technology necessary to achieve business agility. We're probably in far too deep for the average bear and well beyond most coherent well-accepted theories of business agility. However, now its time for judgement day—That is to separate the wheat from the chaff, the sheep from the goats, and good from evil so to speak. That is, because the last five categories consisting of strategy, culture, process, product and service, and technology required no deep lasting structural changes—They were just lipstick on a pig. Now its time to skin the pig and eat some bacon or skewer the pig and have pig roast—No offense to vegans or animal rights activists intended! Although the organizational psychological changes required by the first five dimensions of this business agility model will leave indelible marks on the soul of the business, enterprise, or organization, the next four will demand physical changes to which there is much deeper psychological attachment. That is, strategy, culture, and process, are merely conceptual abstractions and product and service, and technology are simply temporary expendables. However, changing, reducing, or leaning out your IT infrastructure involves deep physical and psychological change. It involves minimizing, eliminating, and outsourcing data centers and platforms, using Internet services and public clouds, and using commercial services like Office 365, Google email, Zoom, Mural, and online workflow tools like JIRA, Microsoft Teams, and many others. At this point were talking about using fee-for-service, pay-as-you-go on-demand Cloud services instead of a private IT infrastructure. This has the elastic ability to scale, stretch, and even contract with demand, production, growth, and stagnation. An elastic IT infrastructure allows you to scale up and down, even when markets suddenly change with no long-term capital or legal obligations or real estate footprint. What makes them hard to replace is that traditional organizations become attached to their private IT infrastructures, consider them strategic assets, and do not trust their data with public cloud service providers.



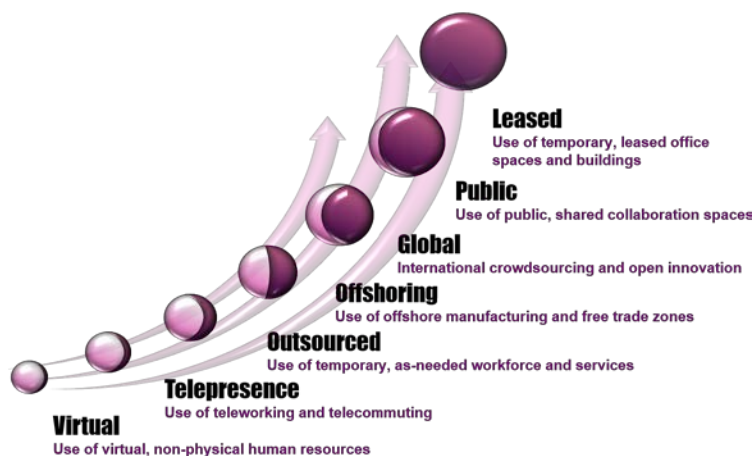
3.7 Organization Design Agility

Another set of keys or crown jewels associated with the psycho-physiological kingdom is the organizational design itself (bureaucratic hierarchy). Size matters in the old traditional kingdom of the 20th Century, but as we've emphasized ad nauseam is that "the bigger you are the harder you fall" in the new lean-agile kingdom of the 21st Century. So, size does matter, but rather small vs. large size. Teaching the elephant to dance was the motto of the late 20th Century when it came to organizational change, while eating the elephant one bite at a time is the motto of the 21st Century (or putting the elephant on a crash diet). An overriding goal of many Western entrepreneurs is to create large monolithic empires—There's nothing like the feeling of power to say one is the CEO of a \$50 billion, 200,000-person business, enterprise, or organization. The organization's design or hierarchy provides multiple functions (i.e., a neat classification of products, services, and functions, a decision-making structure, and most importantly, a feeling of immense pride, glory, and sense of satisfaction). So, although organization design may belong to the first three major dimensions of business ability—a socio-psychological construct—it quickly transcends or manifests itself in the physical realm as a powerful collection of living humans. Hence, to suggest that a small organization design is a critical key or success factor to business agility is to challenge the very heart, mind, body, and soul of the Western organization. A key concept in the lean-agile worldview is to decentralize decision-making and empower front line workers to make most of the decisions. That principle alone obviates the need for a deep organizational decision-making hierarchy. The lean-agile imperative for a sharper focus obviates the need for a broad hierarchy. And, of course, loosely networked self-organizing cross-functional teams obviate the need for rigid hierarchical governance structures. The organization design should be emergent, elastic, temporary, near-term, and collapsible or contractible when it is no longer needed. Yes, indeed, this dimension of business agility cuts deep into heart of Western organizational design (psychology/physiology).



3.8 Capital Infrastructure Agility

Yet, even more invasive than the business agility dimension of organization design agility—since every Western CEO loves to see themselves at the top of the heap with thousands of reports beneath them—is capital infrastructure agility. In addition to the old kingdom economic key performance measure of number of employees, is billions of dollars of capital infrastructure footprint as a function of global sites, manufacturing capability, product lines, and even real estate owned or leased. Manufacturing capacity or output was an ironclad measure of economic prowess in the old kingdom. Today, there are few manufacturing plants in the Western Hemisphere, most buildings are leased commercial office spaces, and the new capacity is revenue generated vs. units produced. So, now CEOs boast of global storefronts, cities occupied, square footage leased, and even energy consumed or not consumed in terms of Power Usage Effectiveness (PUE). However, in the new lean-agile kingdom of the 21st Century, the new PUE is ZERO, cities occupied or buildings leased ZERO, and square footage of leased office space ZERO. You see, when an agile business, enterprise, or organization can elastically expand and contract with seasonal demand, market competition, or market disruption, the best capital infrastructure is no infrastructure. This is a hard blow to the immense ego and psychology of the Western CEO, which is why capital infrastructure agility is where the rubber meets the road when it comes to business agility (no more lipstick on the 20th Century pigs claiming to be lean and agile)! In one example a top 25 traditional Western university has a 10 times larger capital footprint than the largest global online university with well over 10 times the power consumption. This example obviously begs the question why the differences weren't 100 or 1,000 times—Why did the online university need a capital footprint at all—Or was it simply masquerading as a fully-online university while secretly aspiring to be a traditional brick-n-mortar university—We strongly suspect the latter as it had many face-to-face classrooms.



3.9 Internal Operations Agility

The last bastion of old kingdom 20th Century traditional businesses, enterprises, and organizations is clearly full-time internal operations departments, functions, and staff. That is, teams of full-time lawyers to establish a plethora of legal contracts, protect intellectual capital, establish governance guardrails for employee behavior, and, of course, pursue costly litigation if any of these step-out-of-bounds. This also includes purchasing functions for goods, services, and equipment, finance to collect revenues and pay debts, budgeting accountants to manage cashflow, marketing, sales, and advertising to showcase wares, human resources to manage your clone army of employees, and training and education to develop your workforce (among many other operations functions). Well, if new kingdom 21st Century lean and agile businesses, enterprises, and organizations are smaller, virtual, elastic, pay-as-you-go, and on-demand, then so are all traditional operations functions.



Ironically, oftentimes, entrepreneurial startups, research and development functions, and other exploratory initiatives obey all of the dimensions of business agility to the letter of the law (i.e., strategy, culture, process, product and service, technology, IT infrastructure, organization design, capital infrastructure, and internal operations). However, it is only when these fledgling babies become financially viable with bank loans, revenue streams, and an ever-increasing size in terms of growth, mergers and acquisitions, and market attrition, are the laws of business agility broken. That is, it is almost a sin for a startup to exhibit business agility and kosher to violate its laws. If we've learned one thing from entrepreneurial theory—Is that it's a sin to stop following the laws of business agility in lieu of traditional dimensions mastered in the 20th Century to the demise of most Western manufacturing firms. Western intellectual visionaries predicted the demise of manufacturing in lieu of knowledge-intensive industries. What they failed to predict was the evolution to business agility dimensions!

4. Business Value

We've covered a lot of ground in a short space, including the attributes of traditional 20th Century manufacturing organizations, demarcation of lean thinking in 1990 based on TPS, emergence of late 20th Century adaptive organizations, emergence of agile methods at the team, project, and portfolio level, emergence of early 21st Century business agility definitions, dimensions, and models, and, of course, widespread popularity of business agility by 2015. However, we went deeper than most models of business agility, arguing that cosmetic or conceptual dimensions are only skin deep, while the physical dimensions of business agility strike at the heart of the matter offering the only full elasticity and resilience to market fluctuations and disruptions. Full business agility is a little bit like Amazon's Cloud Formation and Elastic Beanstalk—One simply runs a script to standup a virtual enterprise on a pay-as-you-go on-demand basis—Which are much like terraforming virtual worlds in Leonardo DiCaprio's 2010 hit film, "Inception!" Therefore, exhibiting business agility literally means a complete top to bottom transformation of its conceptual, logical, and physical components (not merely adding agile concepts to a pantheon of deeply embedded traditional practices).

However, now it's time to shift gears and begin examining the economic benefits of business agility! This, of course, was the goal of this entire treatise in the first place! However, it was necessary to lay the theoretical foundation for any of the results cited below! Without a doubt, Jim Collins' treatise on "Good to Great" was one of the first comprehensive analyses of business agility economics illustrating agile firms had an average of seven times better market performance (in terms of stock price). However, Jim, like most other scholars of his time—including Michael Porter—focused on reviving Western 20th century brick-n-mortar retail and manufacturing firms, while reviling and vehemently marginalizing information technology and IT suppliers. None-the-less, it remains an important early economic study of business agility! This was later followed in 2007 by the Business Technology Management Institute (BTM) Business Technology Convergence Index somewhat corroborating Jim Collins' results. However, the 2007 BTM studies embraced the use of information technology as critical success factor (CSF), while Jim Collins reviled IT completely! He was merely one of many traditional management theorists—Neo-Luddites—who celebrated the Internet's bubble burst in 2001, mistaking this early market crash for the end of the Internet, information technology, and IoT in general!

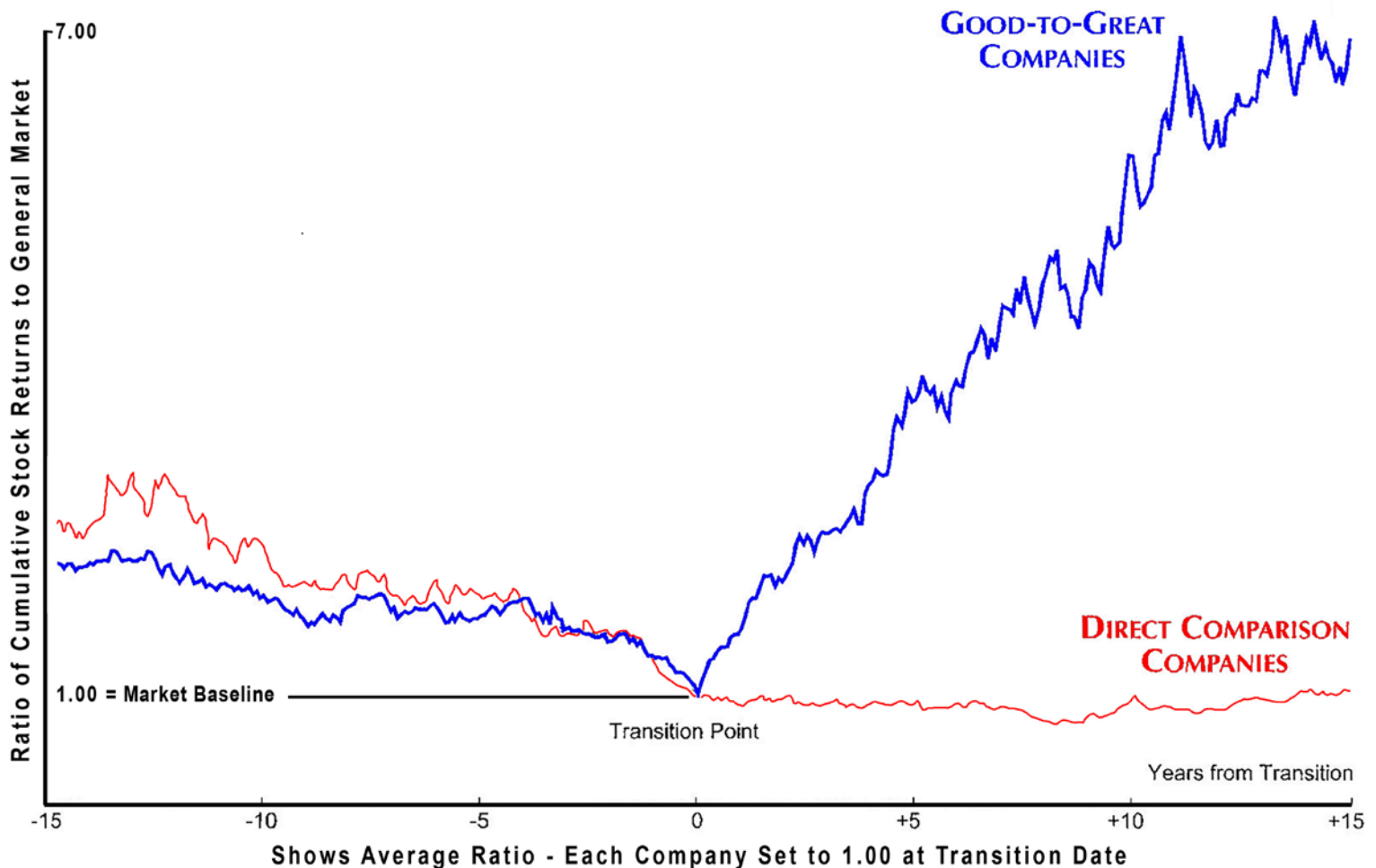


Figure 2 – Early Comprehensive Study of the Economics of Business Agility from "Good to Great" (Jim Collins)

Table 3 – Economic Value of Business Agility (from 2007 to the Present Age)— See <http://bit.ly/2WO6tCu>

No	Year	Source	Findings	Responses
1	2020	Harvard (Thomke)	<ul style="list-style-type: none"> • 63x more product and service releases (Pinterest) • 60x more product and service releases (New Zealand) • 38x more product and service releases (State Farm) • 29x more product and service releases (IBM) • 25x more product and service releases (Bing) 	500 Public Firms
2	2020	Pricewaterhouse-Coopers (Siegel & Booth)	<ul style="list-style-type: none"> • 47% of organizations are more adaptable • 41% of individual teams are more adaptable • 41% of teams deliver valuable solutions • 38% of teams deliver innovative solutions • 36% of solutions have higher quality 	850 Senior Executives
3	2020	Project Management Institute (Langley)	<ul style="list-style-type: none"> • 38% improvement in meeting goals • 46% improvement in meeting cost targets • 62% improvement in meeting time constraints • 57% improvement in meeting scope constraints • 91% improvement in meeting success criteria 	3,972 Project Professionals
4	2020	President’s Management Agenda (Weichert & Vought)	<ul style="list-style-type: none"> • Streamlines major infrastructure projects • Improves digital transformation acquisitions • Improves taxpayer customer experience • Accelerates government modernization • Strengthens performance and risk management 	377 National Executives
5	2020	The MITRE Corporation (Modigliani, et al.)	<ul style="list-style-type: none"> • Enhances mission assurance • Increases combat power • Improves acquisition speed and agility • Improves mission capability • Increases and optimizes joint military forces 	32 Military Executives
6	2020	McKinsey (Handscomb, et al.)	<ul style="list-style-type: none"> • 93% significantly better customer satisfaction • 76% significantly better employee engagement • 80% significantly better resource reprioritization • 93% significantly better operational performance • 92% significantly better global market adaptation 	61 International Executives
7	2020	Deloitte (Smart)	<ul style="list-style-type: none"> • Enables employees to grow their careers • Provides opportunities for collaboration • Attracts younger, highly motivated talent • Strengthens attractiveness of employers • Helps firms with digital transformations 	26 Financial Executives
8	2019	CapGemini (Wahler, Bohn, & Kappler)	<ul style="list-style-type: none"> • 55% reduction in volatility, uncertainty, complexity, etc. • 32% improvement in modernizing business processes • 27% improvement in business market competition • 27% improvement in organizational business value • 23% improvement in attracting talented employees 	1,135 Management Professionals
9	2019	Business Agility Institute (Leybourn & Elatta)	<ul style="list-style-type: none"> • 27% of organizations have better customer satisfaction • 23% of organizations have better employee satisfaction • 18% of organizations have better market success • 12% of organizations have better collaboration • 10% of organizations have better accountability 	453 Business Professionals
10	2018	Scrum Alliance (Engelmann)	<ul style="list-style-type: none"> • Project teams produce higher quality product results • Project teams operate more cost effectively/efficiently • Project teams produce better customer satisfaction • Project teams collaborate and communicate better • Project teams work at higher velocity and productivity 	2,000 Agile Professionals
11	2018	Project Management	<ul style="list-style-type: none"> • 78% improvement in on-time project completion 	4,445

		Institute (Langley)	<ul style="list-style-type: none"> • 56% improvement in meeting budget constraints • 39% improvement in satisfying business goals • 40% improvement in meeting scope constraints • 50% improvement in overall project success 	Project Professionals
12	2018	Freeform Dynamics (Lock & Betts)	<ul style="list-style-type: none"> • 4.1x improvement in customer alignment and strategy • 2.3x improvement in organizational risk management • 2.4x improvement in collaboration and communication • 2.6x improvement in information technology security • 2.5x improvement in delivery and deployment frequency 	1,279 Senior Professionals
13	2018	Forbes Insights (Bresenham, et al.)	<ul style="list-style-type: none"> • 60% faster product and service time to market • 59% faster product and service innovation • 58% improved non-financial business results • 57% improved management and employee morale • 57% better ability to attract top talent 	1,007 Global Executives
14	2018	Forbes Insights (Bresenham, et al.)	<ul style="list-style-type: none"> • 2.6x better agility within specific organizations • 2.1x better agility across the entire organization • 0.6x better agility across all organizational functions • 0.5x better agility within organizational functions • 0.4x better agility within organizational projects 	1,007 Global Executives
15	2018	CA Technologies (Duggan)	<ul style="list-style-type: none"> • 82% better ability to respond to new opportunities • 54% higher employee productivity and retention • 51% improved customer satisfaction and retention • 47% reduced organizational costs and wasted resources • 43% better continuous improvement based on data 	150 Business Executives
16	2018	Accenture (Woolf, Young, & Tabernor)	<ul style="list-style-type: none"> • 46% better enterprise change outcomes and benefits • 54% faster delivery of enterprise wide projects • 32% increased enterprise collaboration and innovation • 36% improved enterprise wide stakeholder involvement • 74% lower costs and more efficient change projects 	3,500 Financial Employees
17	2017	Scrum Alliance (Hershman)	<ul style="list-style-type: none"> • 54% improved satisfaction with deliveries • 51% better time to market with deliveries • 49% better quality with deliveries • 45% improved delivery staff moral • 31% improved return on investment 	2,000 Agile Professionals
18	2017	Project Management Institute (Langley)	<ul style="list-style-type: none"> • 26.0x better program management measurement • 16.4x better organizational cross-training • 13.0x better program management improvement • 10.0x better program planning adjustments • 6.8x better program management planning 	1,469 Project Professionals
19	2017	CA Technologies (Marcotte)	<ul style="list-style-type: none"> • 65% better customer satisfaction • 58% higher employee productivity • 57% reduced organizational costs • 54% better market differentiation • 51% reduced overall project failures 	150 Business Executives
20	2017	Accenture (Buckhurst & Webb)	<ul style="list-style-type: none"> • 74% improved customer engagement and ownership • 68% improved quality of final product and services • 65% greater acquisition program transparency • 64% greater business and product alignment • 52% greater acquisition efficiency 	25 Government CIOs
21	2017	Accenture (Ekdahl, Percival, & Riecki)	<ul style="list-style-type: none"> • 70% greater digital transformation • 70% increase in customer satisfaction • 53% increase in adoption of new business models • 50% increase in profitability and cost management 	207 Business Executives

			<ul style="list-style-type: none"> • 47% increase in ability to cope with emerging technologies 	
22	2016	McKinsey (Bazigos, De Smet, & Gagnon)	<ul style="list-style-type: none"> • 37x better innovation and learning • 35x better role clarity and accountability • 33x better organizational discipline and culture • 32x better organizational leadership and motivation • 31x better organizational values, alignment, and morale 	1,000,000 International Professionals
23	2015	Project Management Institute (Langley)	<ul style="list-style-type: none"> • 66% of projects exceeded ROI • 57% of projects increased speed • 52% of projects delivered on-time • 47% of projects satisfied their budgets • 39% of projects satisfied their business goals 	1,397 Project Professionals
24	2014	Pricewaterhouse-Coopers (Modly, et al.)	<ul style="list-style-type: none"> • Adaptability - Ability to adapt to new missions • Innovation - Ability to generate innovative solutions • Collaboration - Ability to collaborate across government • Visibility - Ability to increase visibility and transparency • Velocity - Ability to increase velocity and responsiveness 	50 Military Commanders
25	2014	Project Management Institute (Langley)	<ul style="list-style-type: none"> • 5.0x better economic performance • 4.0x better overall portfolio maturity • 3.4x better organizational level agility • 2.0x better business to project alignment • 2.0x more successful strategic initiatives 	2,500 Project Professionals
26	2013	Citrix Online (Greening)	<ul style="list-style-type: none"> • Faster releases • Increased revenues • Increased market share • Increased risk management • Better sustainability and morale 	420 IT Professionals
27	2012	Project Management Institute (Langley)	<ul style="list-style-type: none"> • 78% of projects exceeded ROI • 71% of projects increased speed • 66% of projects delivered on-time • 60% of projects satisfied their budgets • 41% of projects satisfied their business goals 	1,000 Project Professionals
28	2011	VMware (Patel)	<ul style="list-style-type: none"> • 57% better customer engagement/experience • 57% accelerated operational project execution • 56% faster exploitation of new market opportunities • 48% organizational level continuous improvement plans • 44% better organizational risk management and avoidance 	600 Corporate Executives
29	2011	BTM (Alva, et al.)	<ul style="list-style-type: none"> • 3.7x better economic value added (EVA) • 2.6x better return on capital (ROC) • 2.0x better return on equity (ROE) • 1.9x better EBITDA/sales measures • 1.3x better stock price stability 	1,000 Corporate Executives
30	2009	EMC (Glenn)	<ul style="list-style-type: none"> • 61% faster decision-making and execution • 38% improvement in operational process efficiency • 34% improvement in firm accountability and credibility • 33% improvement in knowledge management and sharing • 28% improvement in strategic planning and adaptation 	349 International Executives
31	2007	BTM (Hoque, et al.)	<ul style="list-style-type: none"> • 5.1x better corporate-wide earnings • 4.0x better corporate-wide revenues • 1.9x better corporate-wide return on investment • 1.1x better corporate-wide earnings before taxes • 1.1x better corporate-wide return on equity 	1,000 Corporate Executives

In spite of these rather impressive (early) studies of the economic benefits or value of business, enterprise, and organizational agility, these are only the beginning! True business agility in the form large scale business experimentation is starting to emerge, illustrating that a strong information technology fabric combined with IT-based A/B testing yields impressive economic benefits. At least two major studies illustrating the impressive market benefits of large-scale IT-intensive A/B testing include “Experimentation Works” (Stefan Thomke) and “The Power of Experiments” (Luca and Bazerman). There is even an earlier study illustrating the power of lean-startup techniques for traditional manufacturing industries as well such as “The Startup Way” (Eric Ries). There really is no end or limitation to the power of lean-agile thinking-based business agility in the 21st Century whether it is manufacturing, retail, or IT.

5. Conclusion

The purpose of this article was to examine the value of business, enterprise, and organizational agility. We’ve examined the history and origin of business

agility, illustrating that it was born out of flexible manufacturing. However, lean-agile thinking was adapted to the West in 1990, information technology, expanded to subsume all business functions, and even retrofitted back onto manufacturing industries. That is, Toyota is now using business agility techniques pioneered in the West’s smoking-hot IT industry to modernize its automobile manufacturing capabilities. Because of the threats of upstarts like Tesla—that’s basically a giant smartphone on wheels with thousands of real-time A/B tests per day—Toyota realized it’s time to reexamine its approach to automobile design.

Footnote. *Business value is no longer measured in terms of tangible dollars and cents (revenues and profits), but rather in intangible terms such as millions of end users, impressions, repeat visits, latency, speed, simplicity, usability, user experience, gender appeal, shopping cart abandonment, signups, referrals, likes, downloads, checkouts, purchases, repeat purchases, loyalty, and advertisements clicked upon (so beware of this subtle but extremely profound 21st Century shift)!*

Stock Performance

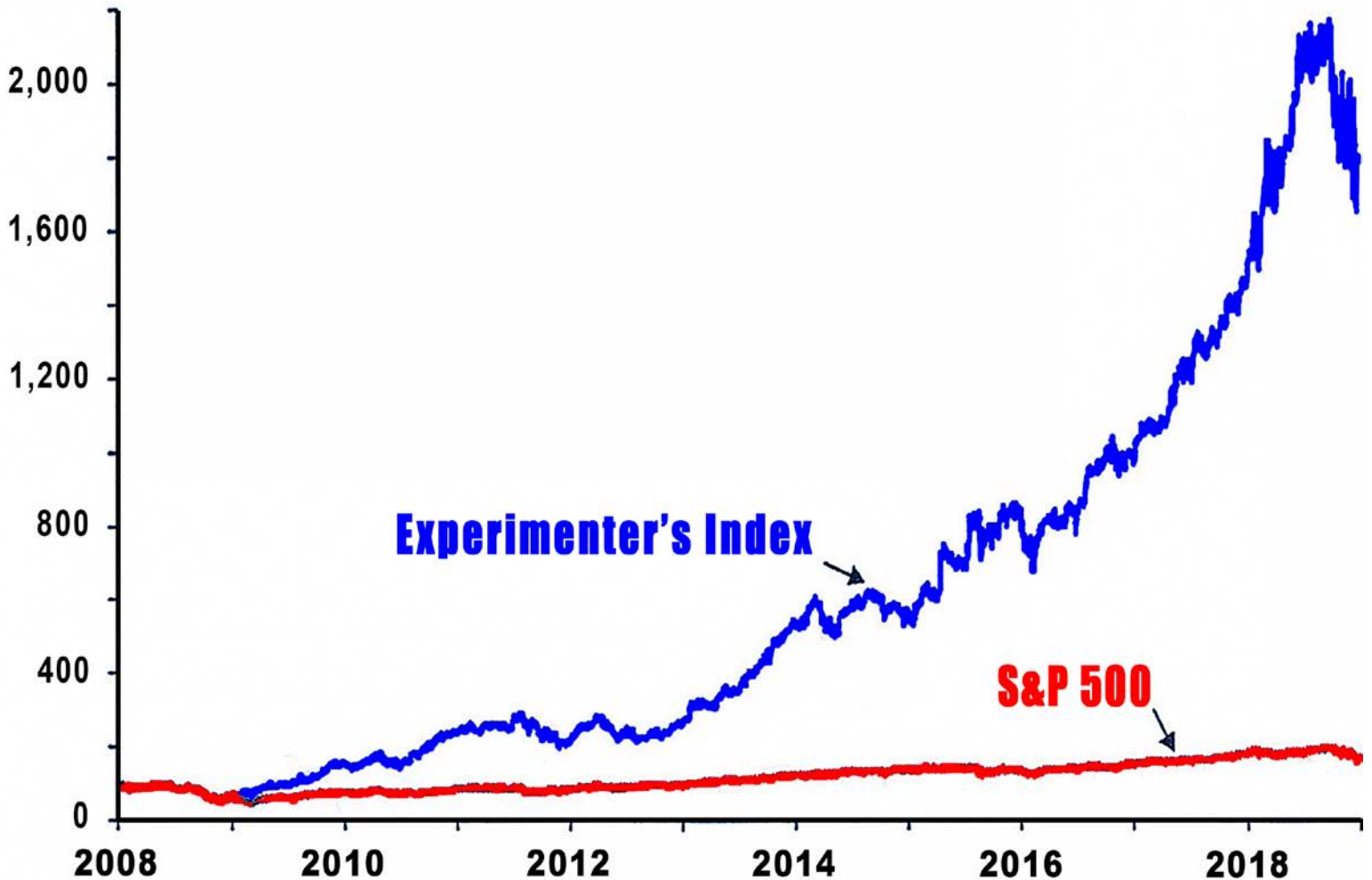


Figure 3 – New Study of the Economics of Business Agility from “Experimentation Works” (Stefan Thomke)

CASE STUDIES OF HIGHLY-SUCCESSFUL BUSINESS AGILITY

- **Open Source Software Community.** *The first major case study of business agility is clearly exemplified by the worldwide open source software community (OSSC) in every facet, dimension, and attribute. Commercial software became a legitimate industry and contender for world domination circa 1970 when the U.S. Department of Justice (DoJ) threatened to break up IBM into two parts—One for mainframe hardware and the other for mainframe software. The issue, of course, was that IBM assembled a team of cracker jack old school legal teams to begin suing U.S. computer firms for making and selling third party software applications for its mainframes. In order to prevent an unnecessary monopoly, the U.S. government had to step into to prevent IBM from doing so, and thus, the worldwide commercial software industry was born. Within five short years—circa 1975—computer programmers began creating (free and) open source software—that is, software source code that was open and (relatively) free of commercial licenses for adaptation, extension, and improvement. By the 1980s, open source software operating systems were created, and millions of lines of open source software code began to emerge in that timeframe. With the advent of the World Wide Web (WWW) in the 1990s, the number of open source programmers, applications, and lines of code took off like a hot rocket! So, what were the characteristics of open source software programmers and their so-called communities. Well, first of all, they did not belong a single company, there was no hierarchy, they didn't get paid for their software, there were few written rules and procedures (bureaucracy or governance boards), they didn't have an office front or high-rise building, they didn't build or buy their own capital IT infrastructure, there were no employee agreements or contracts, and most of all, they coded millions of lines of open source software 24 hours a day without getting paid! What! That is, just as Dan Pink proclaimed in his best-selling book, they created hundreds of millions of lines of code for the sheer enjoyment, and they did a better job—faster than paid compute programmers! Once again, as the Internet took off in the late 1990s and early 2000s, web programmers needed building blocks to create web servers, middleware, and applications, and simply downloaded free operating systems, development environments, compilers, editors, and other tools, web servers, databases, and many other valuable utilities for constructing finished systems like email services! By the late 2000s, over 70% of public and private sector computer programmers were using open source software created by millions of programmers working late at night in the comfort of their own home—No need to call human resources to complain about your noisy officemates (spouses, children, pets, neighbors, etc.)! By late 2010, the open source software community (OSSC) comprised 50 million volunteer programmers who created nearly 400 billion lines of code and over half (50%) of all public and private sector IT and computer system applications were comprised of open source software. Open source computer programmers often applied “Ri-phase” lean-agile thinking principles like pull systems, value stream mapping, kanbans, time-boxed iterative development, test driven development, continuous integration, continuous delivery and deployment, and DevOps (development operations). They were in constant communication with one another, formed small cross-functional (two-pizza) teams with high-trust, fixed their bugs and security vulnerabilities quickly (working 24 hours a day), and maintained the lowest technical debt of anyone on the planet. While initially creating and evolving large monolithic code bases one line of code at a time by an army of all-night swarming programmers, they eventually broke their code bases into smaller components, microservices, and even mobile apps. They also embody experimentation principles, using A/B testing principles to tryout enhancements. Although the open source software community (OSSC) continues to “quietly” grow and expand, more traditional brick-n-mortar commercial software firms are starting to acquire or purchase large swaths of open source software to patent and commercialize it. However, the biggest surprise is two-thirds of the world's open source software is now enhanced by China!*
- **Global University.** *The second business agility case study involves a major global university. The university was established over 70 years ago to serve marginalized students and demographic groups. This is the essence of business agility, that is identifying gaps in existing markets, underserved markets and customers, and quickly filling those gaps to succeed in seemingly impenetrable markets. While U.S. students clamor to get into a finite number of seats in top 100 universities, this university focused on those not destined for a few select seats in top universities. At first, it focused on active duty military personnel, since the U.S. military promises its enlistees college assistance, college degrees, and continuing education, but does not directly provide undergraduate or graduate schools for most of its personnel (save military officers). So, this university sought to help fill that gap (i.e., translate their tuition assistance directly into undergraduate and graduate degrees). The next thing it did was forward deploy all of its college courses directly to military bases without its own capital infrastructure. Of course, it tailored the material to practical vs. theoretical college degrees to provide relevant education to the military workforce as it exited their terms of service. Finally, it ensured that every student had access to equal education and helped ensure everyone had an opportunity to matriculate and complete their education. As this global university began succeeding and expanding, it continually experimented and expanded its virtual footprint onto more military bases and worldwide locations, its degree and course offerings, and its services to ensure successful matriculation. Because it was open to all military personnel regardless of race, creed, religion, or gender, it attracted students who would never have been considered by a top 100 university. In other words, it became the largest degree-granting university to U.S. minorities, in spite of the fact that it was not an ethnic university like a Historically Black College and University (HBCU). In fact, many minorities were finding the administrative bureaucracies of HBCU's impossible to navigate while being denied entrance into top 100 U.S. universities. So, this global university began attracting students in droves from HBCU's. As the 20th Century wore on and information technology (IT) became a key component for educational course delivery, it invested in its own IT platform for effective course delivery around the globe 24 hours a day. More and more courses were migrated from face-to-face military bases to online course delivery. The courses were scheduled and proctored by college professors, but the work could be completed by the student around the globe 24 hours a day without having to attend a live synchronous course lecture. The variety of courses and degree programs dramatically expanded, and so did access to a U.S. undergraduate and graduate degrees while top 100 universities were reducing their enrollees and the U.S. population continued to expand (denying access to a U.S. college education to most high school graduates). In other words, traditional brick-and-mortar top 100 universities failed to keep up with growing demand, due to limited faculty, classrooms, and desks. Instead, they raised their standards higher and higher and began admitting more foreign than domestic students, thus reducing access to a college education for the majority of Americans. In the end, this university had 3 times the number of students, courses, degree programs, and college graduates each year for every American—Regardless of typical screening criteria. More importantly, the faculty were devoted to experimenting with each class and degree program from semester to semester to achieve peak matriculation and graduation rates, while guaranteeing a high-quality education (often beyond the standards of a top 100 school). This university exhibited ALL of the attributes of modern business agility by the early 21st century including the lowest PUE of any school. That being said, even the now deceased Clayton Christensen theorized that most first-movers like this global online university may not survive against more established firms, and that may certainly be true in this case. As we've alluded to, this was more of a hybrid online and traditional university, opening the door to more advanced universities with greater business agility than this first mover!*

- Major Dot Coms.** *The third business agility case study has to be a composite of major dot coms like Google, Amazon, eBay, Twitter, Facebook, etc. Why these firms? Well, because most of them were born or formed from 1994 to 2004, during the height of the Internet boom! That is, they are largely software-based companies. The products and services, or service-products are “software”—One of the most malleable product and service mediums ever create, which can be created, emerged, evolved, or amalgamated one-line-of-code at a time using lean-agile principles. Their most valuable intellectual property is often in the heads of their brightest computer programmers (vs. capital-intensive manufacturing facilities), their CEOs are lean-agile thinkers, their strategies fluidly evolve and adapt like lightning, their cultures are lean and agile too (along with their processes), and their technologies, technology designs, and IT infrastructures are based on flexible IT that can expand and contract with market demand. More importantly, their front-line workers are empowered to innovate without having to escalate release authority to stodgy configuration control boards, 1,000-page process guidelines, and rigid integrated master schedules (IMSs). Their programmers deploy over 10,000 updates to their service-products a day, they employ A/B experiments to tweak milliseconds of performance out of their service products resulting in tens of millions of dollars of increased revenue with each test, and they literally bludgeon their competitors to death with split second product releases to four or five billion end-users at one time. Their IT infrastructures are based on elastic cloud computing that can scale up and down hundreds of petabytes at a time, exhibit global high availability and redundancy, automatically perform billions of automated quality tests (without the need of an army of QA testers), and automatically rollback any human or machine error to a pristine state in a millisecond using the latest artificial intelligence algorithms. These firms grew to trillion dollar market capitalizations in merely a decade, reached every continent, country, city, and end-user in what would have taken a 20th Century manufacturer 100 years, and each have billions of customers (something no 20th Century manufacturer was ever able to achieve, nor will ever do so). Their workforces are young, multicultural, and, oftentimes, comprised of international employees working out of the comfort of their own home nations, to stem the constraints of cultural adaptation, legal barriers, and mass relocation of their global workforces. Not only this, but they may also capitalize upon the tactical advantage of local labor rates and other economic leverage points. They’ve gone back and forth on whether to have large capital footprints like the commercial shrink wrapped software firms of the 1980s (Microsoft), allowing their computer programmers to telework from home or work at plush corporate offices with private chefs, gaming rooms, living room style collaborative offices, exercise rooms, and free food and drink. With the advent of global pandemics like COVID-19, this may push the major dot coms to rethink their expensive, luxurious capital infrastructures, allow their computer programmers to telework permanently, and eliminate their capital infrastructures all-together. Many dot coms do not own nor operate their own IT infrastructures, and merely use Amazon’s pay-as-you go, on-demand, elastic global virtual cloud computing platform to host their software-intensive service-products. With the plethora of public cloud-based service-products available for composing corporate applications, as well as the virtual cloud infrastructures themselves, it’s becoming unnecessary for public and private businesses, enterprises, and organizations to compose their own IT-intensive applications. With the power of their applications and skills of their computer programmers, it’s becoming ludicrous for firms to build their own applications at all! That is, the capabilities of Silicon Valley engineers belonging to major dot coms are years, if not decades beyond the skills of the typical Fortune 500 firms, and certainly well beyond those of most engineers in public sector IT acquisition and modernization programs! Some contemporary management scholars believe that no major firm can outcompete or survive against the fiercely Darwinistic business agility of dot coms!*
- Global Manufacturer.** *The fourth major case study of business agility surprisingly involves a rather traditional North American global manufacturing firm. That seems like somewhat of an oxymoron, because there aren’t many North American manufacturing firms anymore. This was certainly one of the “Last of the Mohicans”—No pun intended—Since its headquarters was actually in the Mohican’s original territory! It was basically a composite or conglomeration of left over North American manufacturing firms, so there was little market competition, however, it did manage to maintain a top 5 ranking in the late 20th and early 21st Century due to rigid management. However, this was simply unsustainable, because technology was evolving too quickly, its governance and oversight policies were too rigid, and, worst of all, most of its products, services, and service products were simply too complex (over scoped). Each took decades and billions of dollars from concept to cash, they were based on capitalizing upon capturing shrinking markets for manufactured goods and services, and, of course, the technologies upon which their overly complex products and services were based were simply obsolete. By the mid-1990s, they seized upon the lean-thinking phenomenon in the form of six sigma and then lean six sigma to preserve their market position and save their dying corporation. They hired aggressive and highly-motivated junior military officers (JMOs) to drive each of their major products and services through multi-year long six sigma and lean six sigma cycles—Knowing that these were long lead time items spanning decades due to immense over scoping! As their CEO retired and died, their market share eroded, and 10-year multi-billion dollar lead times were no longer tenable after 2010—Using “Crisis as a Catalyst for Change”—It hired a Silicon Valley Dot Com computer programming jock to change its culture into a Dot Com A/B testing company! It had to plan a brand new narrowly scoped (MVP) product or service in only five days for a few thousand dollars—Versus a billion dollars and decade! Of course, its stodgy managers and engineers all certified as six sigma or lean six sigma blackbelts rebelled, but its corporate executives insisted they listen to Google’s crackerjack computer programmer! Surprisingly, it was their physicists and engineers who listened to Google’s jock, while their managers insisted that nothing meaningful could be designed in under a decade for less than a billion dollars! He challenged their worldview, knowing that more than 95% of a product’s or service’s features are simply waste—Not needed at all—Down scope their product and service specs to a few key characteristics, quickly mock them up using A/B tests, and get them in front of live customers ASAP! After trying this out, rather than having managers read the minds of hypothetical customers 10 years from now, over scope specifications with thousands of (hypothetical) requirements, and then codify these into decade long integrated master schedules (IMSs), customers said they would trade off complex expensive products 10 years from now for simple, less expensive products today! It was a simply a clash of worldviews—The old traditional mindset that quality meant thousands of hypothetical requirements delivered in a decade for a billion dollars vs. a simple one-or-two-week design that provided immediate business value today! Once he was able to wear its six sigma and lean six sigma blackbelt managers off the psychological necessity to plan over scoped products and services, then the dominoes began to fall, and the North American manufacturer began producing a slew of new value adding products and services in one or two weeks—No multi-year long six sigma and lean-six sigma cycles necessary! When you only have one or two product or service characteristics, you don’t need an army of physicists to test thousands of characteristics anymore! This falls in line with week-long Design Sprints or 5x5 X-Team week-long business experiments. This is a far cry from 10,000 A/B tests per day, but even weeklong Design Sprints can add up to hundreds or thousands of A/B experiments per month, which is a very respectable number for a global manufacturer! This global manufacturer has been so successful, the Toyota Production System (TPS) managers use short design sprints to catch up!*

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