

## **The Economics of Collaboration: Creating a Virtuous Cycle of Economic Growth**

### **Executive Summary**

The collaborative process can be broken down into five sequential core interactions: Find, Connect, Share, Capture and Act. By successfully executing each of these interactions, value is added for the next step, ultimately creating a virtuous circle that amplifies these benefits year after year. This collaborative process allows firms to achieve a sustainable competitive differentiation versus their peers. An increasing amount of incremental value is added with each subsequent stage of the collaboration process, much like in baseball where the first batters need to perform relatively mundane activities to get on base in anticipation of a home run from the clean-up hitter who Acts by making a fully-informed decision.

Improved collaboration processes are often the catalyst behind productivity improvements. Without efficiency driven economic gains, U.S. economic growth in 2009 would have been even more dismal than it was. For the most part, these gains were achieved by cutting resources faster than reducing output – an unsustainable trend to say the least. An analysis of the current efficiency of U.S. firms suggests that there's still a significant amount of business process improvements that need to be made despite 2009's experience. By emphasizing the five collaborative interactions, the next wave of improvements can be done in a matter that allows firms to achieve this sustainable competitive differentiation.

### **I.) The Collaborative Process in Detail**

There are a finite number of ways a businesses' bottom line can be improved. A firm can Act Faster, getting its products to market before its competitors. Its employees can Work Smarter, taking maximum advantage of any institutional knowledge and resources to do the best job possible. A firm can Improve Value by making its products and services more attractive to customers, or producing its wares more efficiently, increasing profit margins. Or a firm can Reduce Costs by eliminating input purchase duplication and improving the productivity of its existing assets.

During 2009, most of the corporate value that was achieved fell into this latter category. Real GDP in the U.S. fell 2.6%, yet fixed investment in equipment fell 15.3% and total hours worked fell 4.0%.<sup>1</sup> U.S. productivity (defined broadly as output per unit of input) rose sharply because total output fell less than inputs required to produce this output. Productivity growth is generally a good thing, but this squeeze cannot continue indefinitely. Firms must identify other sources of value if this productivity growth is to continue.

Considered at its broadest level, a collaborative process consists of five sequential pieces:

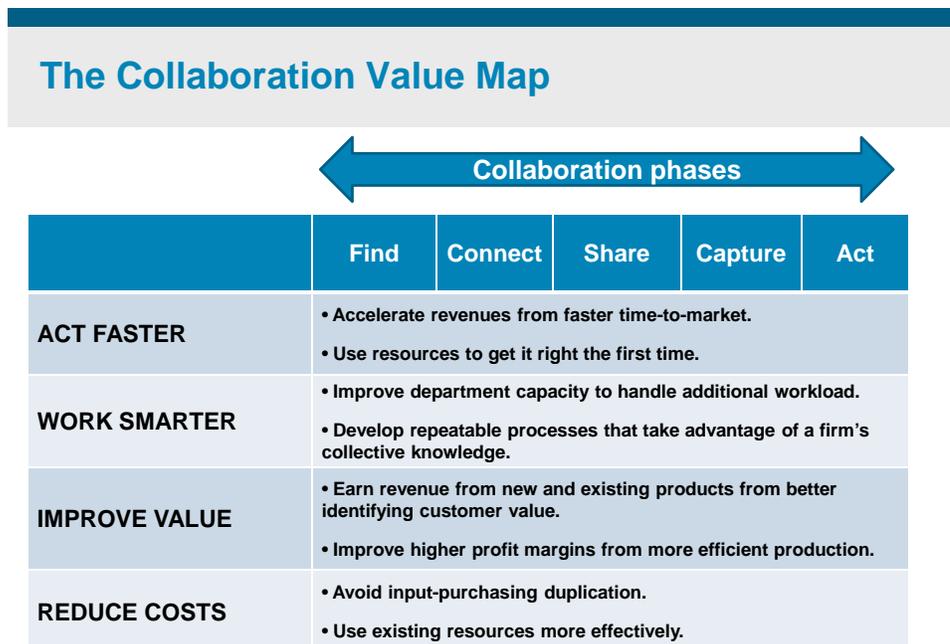
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<sup>1</sup> Real GDP and business fixed investment growth rates are year-over-year and are from the U.S. Bureau of Economic Analysis. Total hours data compare Jan 2009 and Jan 2010 data and are from the U.S. Bureau of Labor Statistics.

- 1.) **Find** refers to the identification of the resources necessary to solve a problem. Directories, subject matter experts, ad hoc or automatic information searches and meta-tags are some of the collaboration tools used in this step of the process. Included in this step is the separation of information from noise in the discovery phase of a process.
- 2.) **Connect** refers to the extraction and intelligent linkage of facts from the resources identified in the Find step.
- 3.) **Share** refers to dissemination of the information to the human and non-human collaboration participants.
- 4.) **Information Capture** refers to the analytical process of sifting through the qualitative and quantitative information identified in the earlier steps. Data quality and relevance are evaluated in preparation for making a decision.
- 5.) **Act** refers to the change that is recommended from the information capture phase.

Figure 1 maps these areas of productivity value against these five collaboration phases. For each of these benefit areas, two value sources are shown.

FIGURE 1



Source: IBSG Economics Practice.

To evaluate this framework, let's examine a hypothetical product development department in a consumer goods-producing firm. The department has 100 employees and handles 20 projects per year. Last year, four of the department's 20 projects were successful and went to market – a 20% success rate. Each of these four successful projects earned \$10 million in gross profits.

Acting Faster benefits include “getting it right the first time” and using technology-based tools to reduce information or resource bottlenecks. By dividing up a business processes into discrete projects and identifying the resources used by each business process step, the benefits of a faster, more precise execution of these processes can be quantified by the amount of capacity freed-up to do additional projects. The example department has about 20,000- person-days available (200 days per person per year), or about 1,000 person-days per project. Improved collaborative tools may help reduce information bottlenecks, such as waiting for data to arrive or for meetings to take place. If this team can reduce the number of person-days by 10%, or to 900 days per project, the team can now handle one additional project by using this newly available capacity. Knowing that a project has a 20% chance of creating a revenue-generating project allows for a specific collaboration value to be estimated. In this case, it would be  $20\% \times \$10 \text{ million}$ , of \$2 million.

Several of the business process improvement areas in the “Act Faster” and “Work Smarter” categories also drive improved time to market (TTM) for new products and services. By accelerating TTM, companies gain additional revenues from accelerated revenue flows. If the collaborative tools described above reduce the go-to-market time by one-month, it is reasonable to count the interest earnings on that revenue as a collaborative benefit. Additionally, if TTM is accelerated to such an extent that first mover benefits are earned (i.e., capturing additional market share by being first in a new market), the TTM benefits can be extended to include the value from any incremental market share. Being the first company out with a new product or feature can generate huge benefits from super-normal market shares. The \$10 million (gross profit) product might be a \$20 million product if it hits the market one month earlier.

“Working Smarter” may also add value by designing and producing products that are more attractive to customers. This may occur by either streamlining the product development process, knowing your customer better, or both. Our product development department may want to collaborate with a marketing expert early in the design process with the goal of raising this product success rate from 20% to, say, 30%; and two additional product successes are worth \$20 million. Additional benefits may be obtained from projects that create higher-quality products from those that are already deemed successful. If the four successes earn \$15 million each rather than \$10 million, then this process improvement is worth another \$20 million. Savings can even be obtained on the failed projects if they are recognized earlier and terminated.

Collaboration driving manufacturing efficiency processes can also improve gross profit margins. More effective communications between product development, design, marketing and manufacturing will create production efficiencies. These might be worth an additional 10%, or \$1 million per successful product to our product development department.

Lastly, resource cost reductions can directly impact free cash flow. These costs may include reduced travel by utilizing immersive, virtual meetings in place of travel; avoiding duplication of research inputs (consultants, third party research reports; office or lab materials, etc.); or simply assuring that every team member's time is fully and properly utilized.

## II.) Creating the Virtuous Cycle of Collaboration-Led Growth

The hypothetical benefits achieved from the product development department in the previous section are not one-time benefits. Once these initial benefits have been earned, they can recur year after year, and can even grow beyond the year one savings as build upon their initial successes. Ultimately, a virtuous circle can be created where a company continuously learns how to execute their key differentiating processes better than the competition. There are several conditions that have to occur in order for this knowledge to accrue:

- 1.) The product creation and support processes have to be dissected into specific, repeatable business processes.
- 2.) The firm must achieve economies of scale, where unit costs of production are reduced as production increase (i.e., use better tools and work more smartly as output increases).
- 3.) The firm must achieve economies of scope, where a company's information and asset base gives it a competitive advantage to expand into adjacent spaces.
- 4.) Share, share, share. It's not what you know, it's how you share and act on what you know that matters. Know your customer, know your product, and continuously stay in touch with all your collaborative partners so that you can make the product better.

In the manufacturing sector, machines become more complex and work faster, manufacturing-line breakdowns are prevented, and the support processes (product design, inventory purchases, distribution, etc.) are better coordinated with production.<sup>2</sup> Collaboration has the same effect on internal business processes as these processes are repeated and continuously improved. Figure 2 examines this virtuous circle of how institutional learning can be harnessed to achieve a competitive advantage. The degree to which business process improvements can emulate manufacturing process improvements depends entirely on the extent to which the business process itself can be decomposed into uniform, repeatable steps so that past experiences can be applied to future activities.

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<sup>2</sup> L. Argote in the British Journal of Social Psychology quantifies this effect for manufacturing firms. This article notes that  $Y = aX^{-b}$  where

Y = hours to produce xth unit

a = hours to produce 1st unit

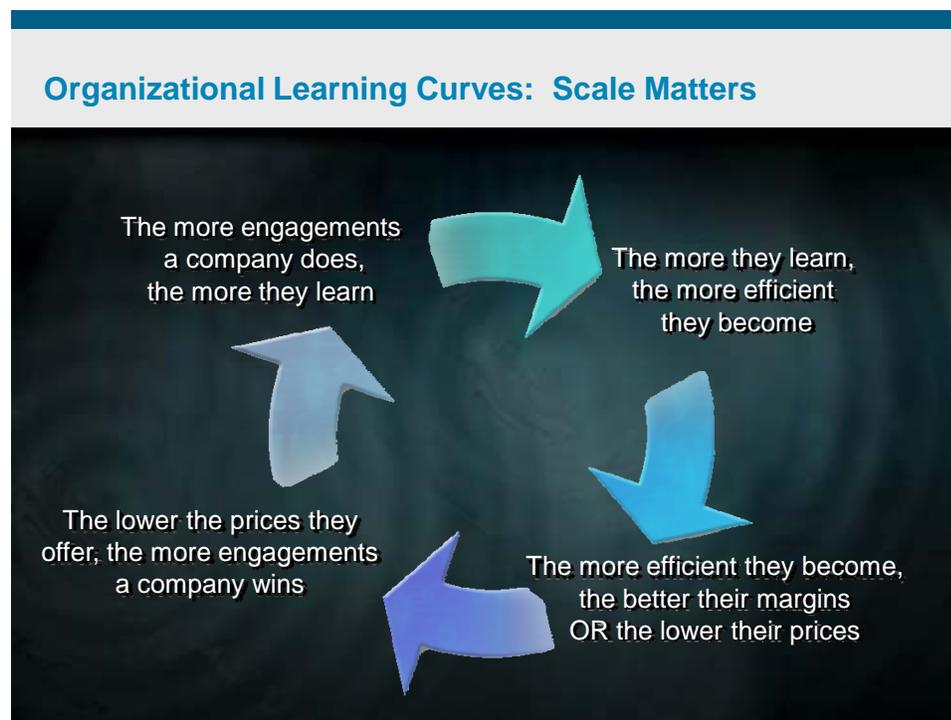
x = cumulative number units produced

-b = rate labor hours are reduced as cumulative output increases

While these improvement processes are repeatable, economies of scope allow for a firm to apply its acquired institutional knowledge to an adjacent space product – a natural extension of an existing product line. An IT firm must use its institutional knowledge to identify, transfer and sell new technologies that will eventually cannibalize its existing revenue streams (and the revenues of competitors, too).

Firms that have developed this virtuous circle of learning vastly improve their sustainability. By focusing resources on business problems or processes that enable a competitive differentiation, a firm is endowed with an automatic competitive advantage over any other firm with less experience in a particular business area.

FIGURE 2:



### III.) Identifying the Value Sources of a Collaboration Process

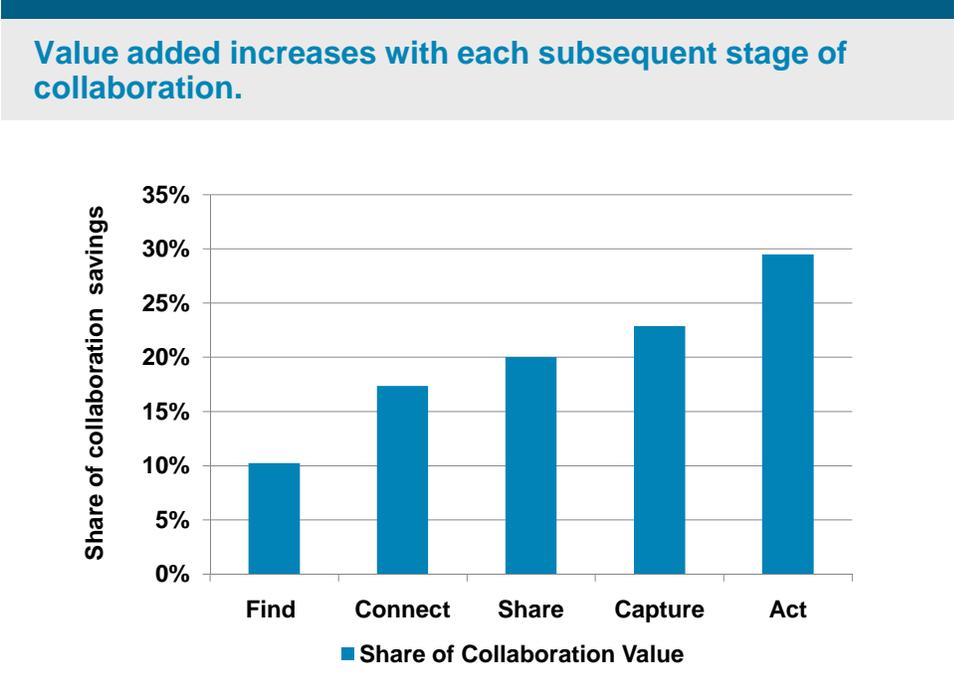
Thus far, the phases of a collaborative process have been identified with some examples of value from each phase. This begs the question of which phases add the most value. A precise valuation cannot be determined given the overlap of the phase definitions and value sources. This would be like trying to figure out if a horse race was won because of the skill of the jockey or the power of the horse. Both inputs are necessary at a minimum level of quality to succeed. However, we can figure out the relative value of executing business processes faster, with greater quality and less expensively – equivalent to asking what the impact of changing race strategies is. This is not to say that all business process improvement is due to better collaboration. But it is reasonable to say that all business processes can

be improved through the more efficient use of information. To be sure, there are other drivers of benefits, such as new or reconfigured IT applications or redeployed labor, but these assets, too, are integral to a collaboration-improving process.

IBSG analyzed the business process spending patterns of several vertical industries and categorized about 200 business processes based on their core collaboration phases. For example, inventory management functions were considered primarily (but not entirely) Find and Connect activities. Help desks were considered as Connect, Share and Act processes.<sup>3</sup> While almost all of these business process improvements derive their value from some or all of these five phases, the relative collaboration value-added increases with each subsequent step collaboration step. This is consistent with the virtuous circle shown in Figure 2. The ability to Find information, while comprising a relatively small amount of overall spending, increases the value of the Connect, Share, Capture and Act phases. Similarly, using the right resources to Connect with the correct people and resources adds more to the Share, Capture and Act phases.

Ultimately, the greatest value is derived from the Act phase since this is where the actual business decisions are made. The logic that went into the Act decision, the decision itself, and outcome can be stored as part of a company’s knowledge base – and to eventually drive another cycle of the virtuous collaboration cycle.

FIGURE 3:



<sup>3</sup> This also assumes that the benefits that can be achieved are proportional to spending.

#### IV.) What is the Value of the Efficiency Gains that Remain?

An earlier section of this paper noted that in 2009, economic output shrank less than employment and investment spending, indicating that firms are producing more output per unit of input. Based on a comparison of total output, total hours worked, net capital spending (new spending minus capital taken permanently off-line), it is estimated that \$570 billion in multi-factor productivity (MFP) growth occurred in 2009.<sup>4</sup> MFP growth occurs when existing production resources are used more effectively (versus adding or altering resources). Traditional sources of multi-factor productivity include empowering employees with greater knowledge about their job, using IT and other hard-goods investments more efficiently, and creating new products and services (or reducing their cost) through original research and innovation. Without this MFP growth, the downturn in the US economy last year would have been much worse than it already was. (See Figure 4.)

The same drivers of multi-factor productivity also drive most business process improvements. To reiterate an earlier point, collaboration doesn't fully drive all business process efficiency improvements, but it is to some extent a catalyst for these improvements. We can't measure the impact of improved collaboration, but we can measure the potential gains for business process improvements.

IBSG analyzed 3,000 public U.S. firms' SG&A / revenue ratios and compared these firms to their respective industry averages. In total, these 3,000 firms had \$10 trillion in revenues, equivalent to about 2/3 of the U.S. economy. Where a firm's SG&A / revenue ratio was above its industry average, the gap was counted as a potential improvement. For example, if a firm's SG&A expenses equal 25% of revenues, and its industry norm is 20%, it is assumed that SG&A expenses could be reduced by the difference, 5% of revenues. If this example firm has \$10 billion in revenues, then it is reasonable to consider \$500 million in SG&A expense savings can be achieved from this one firm. Of the 3,000 firms examined, 60% of these firms had ratios above their industry average and there were 126 firms where this gap exceeded \$500 million.

For these inefficient firms, at least \$600 billion in cost savings can be extracted – or about 6% of the \$10 trillion. Industries with either very large revenue bases (materials, and food, beverage and tobacco), or large service-oriented sectors (diversified financials, banks, healthcare services) tended to have the largest potential improvements in SG&A spending.

Moreover, this amount is a likely underestimate of what can be achieved for several reasons:

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<sup>4</sup> Here's the detail behind this estimate. Total output growth = growth from changes in total hours worked + growth from changes in total capital used and growth from multi-factor productivity (MFP). Reversing this equation, MFP growth = total output growth – growth in total hours – growth in total capital used. Applying numbers to the pieces: 4.0% = -3.5% - (-7.0%) - (-0.5% estimate). To be precise, this equation assumes that economic growth due to changes in the composition of the labor force and in the types of capital used by businesses are both zero, and any inflation impacts are non-existent. This 4.0% MFP growth times about \$14.3 trillion in nominal U.S. GDP equals \$570 billion.

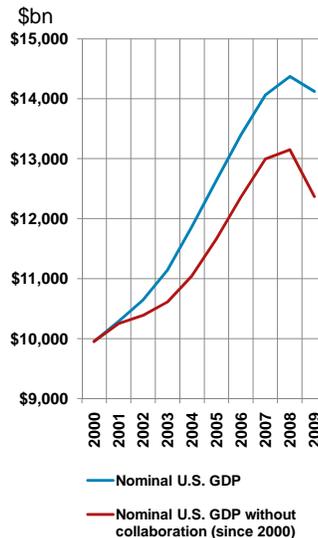
- 1.) It doesn't include any private (mostly, small) businesses or governments who together have several more trillion dollars in business process spending.
- 2.) Other process improvement efforts may impact the cost of goods sold (CoGS). Thus, greater collaboration-driven profit margin improvements could be obtained without meaningfully reducing the SG&A / revenue ratio.
- 3.) The \$600 billion estimate presumes that firms will strive to achieve their industry's SG&A / revenue average ratio. Forward thinking firms will attempt to emulate their industry's best practices and rather than to target this mediocre benchmark.

For Cisco, the most important point is that this \$600 billion recurs every year. As the U.S. economy is about ¼ of the global economy, it is reasonable to assume these potential savings could amount to more than \$2 trillion worldwide.

FIGURE 4:

### What is the market for “efficiency”? At least \$600 billion / year.

- In 2009, the U.S. economy achieved \$600 billion in efficiency gains. With total employment shrinking and capital spending weak, without these improvements, the Great Recession would have been far worse.
- Based on an analysis of the relative efficiency of U.S. firms, there's much more room for improvement.
  - 60% of public firms have SG&A expenses above their industry norms.
  - 126 U.S. firms can each save \$500 million or more *per year* on overhead expenses.
  - While collaboration can't drive all of these efficiency improvements, it can be the catalyst to changing a firm's culture of learning.



## CONCLUSION

About \$570 billion in efficiency gains occurred last year. Further, there's at least \$600 billion more in gains to be achieved, and probably much more. The easy, cost reducing cutbacks drove last year's improvements, but they cannot drive the next round of business process efficiency improvements. As these industry benchmarks improve, the efficiency gains required just to stay competitive will also improve. Any additional benefits will have to come from the "Act Faster", "Work Smarter" or "Improve

Value” collaboration elements benefits. These other types of collaboration benefits need to be considered with the same zeal that we’ve seen with reducing costs.

The good news is that these collaborative processes can be implemented as a first step in a perpetually improving business system. This first step is the most difficult in that it involves adjusting a company’s culture around using new tools and processes. However, once an information base of a company’s collective wisdom becomes a differentiating asset, collaboration as an ongoing process will eventually be business-as-usual.