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IMPACT NOTE

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Paul Rowady
+1.646.661.4248
paul@alphacution.com

Sang Lee
+1.617.338.6015
slee@aitegroup.com

IT Services and Strategic Impacts for Global Banks: The Force Multiplier

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INTRODUCTION

Today, outsourced IT services are firmly embedded in all industries and most large corporations. Alphacution's message to financial sector clients and other buyers of IT services is both blessing and curse: The global IT services sector continues to be dominated by lowest-cost, predominantly India-based human capital, and the motivation to engage with these services continues to be, as it seems to have been all along, about labor arbitrage, or the savings harvested from the reduction of high-cost, U.S.- or U.K.-based in-house human capital in favor of lowest-cost, leased human capital. Although the expectation to improve performance—via higher-quality output, more efficient output, or some other cocktail of innovation—is rarely made explicit, we believe that the potential for enhanced process efficiencies adds value to the equation. This is the blessing part.

The potential curse is more nuanced: Any function or workflow that is outsourced primarily in the interest of reducing cost is simultaneously incurring a potentially serious, albeit intangible, liability. That liability is in the forgoing of the opportunity for the development of intellectual property and other proprietary innovation around functions and workflows that are outsourced. Moreover, any intellectual property rights earned by the outsourced services agent remains the property of that agent, even though process enhancements that result in improved outputs are enjoyed by the bank or asset manager.

In the pantheon of relevant current events, Alphacution discovered one during the development of this research that exemplifies the importance and scale of this sector: A new pure-play entity has been born onto the IT services landscape. At least, its name is new. DXC Technology, the result of the merger of Computer Science Corporation (CSC) and the enterprise services component of Hewlett Packard Enterprise (HPE), has burst onto the scene as a more than US$30 billion IT giant. Mike Lawrie, the chairman, president, and chief executive officer of the new entity asserts that the venture "will become recognized globally as a *force multiplier.*"[1] So, there it is. The gauntlet had already been thrown—and we had already picked it up.

The goal of this report is not only to estimate the portion of banks' IT spending that is attributable to the IT services sector but also to characterize the wisdom of shorter-term cost savings objectives in the face of these potential longer-term and arguably intangible liabilities for banking, financial services, and insurance. What does this modeling teach us about the impacts of these decisions, particularly now that it seems that IT services firms are embedded in long-term—if not perpetual—partnerships with large banks, insurance companies, and asset managers? In other words, what readers will find herein is essentially whether Alphacution agrees with Mike Lawrie. Do IT services represent a force multiplier?

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1. "DXC Technology Revealed as Name for Combined CSC and HPE Enterprise Services Business Following Merger Completion," Business Wire, February 15, 2017, accessed April 2017, http://www.businesswire.com/news/home/20170215005815/en/DXC-Technology-Revealed-Combined-CSC-HPE-Enterprise.

METHODOLOGY

Aite Group's data and analytics partner, Alphacution Research Conservatory, is a data and analytics firm focused on providing technical infrastructure intelligence and has developed a standardized data-driven framework that can measure technical leverage—the return on technology. More importantly, Alphacution can benchmark firms in its modeling sample, thus also providing the ability to calculate a firm's tech dividend or tech debt.

Alphacution's primary research process is to harvest financial and operational data from publicly available sources, such as company annual reports and regulatory filings.[2] In this initial phase of modeling, data sets typically include annual data from all companies and also selective quarterly data from a smaller subset of the same companies. Specifically, most data points are harvested directly from the income statements, balance sheets, and detailed notes for each of these reports.

Alphacution's overarching strategy is to develop models for individual companies that fall into a taxonomy of financial services profiles that are roughly bifurcated between technology buyers and solution sellers. Technology buyers broadly include banks, asset managers, insurance companies, brokers, and exchanges. Solution sellers broadly include horizontal or enterprise IT servicers and vertical IT specialists. From there, individual models are grouped and aggregated into a composite model for each participant profile. In total, Alphacution's model library currently includes financial and operational data related to more than 110 banks, brokers, asset managers, technology vendors, exchanges, and others—the majority of which Alphacution has tracked over the 12-year period ending December 31, 2016.[3] All analytics from this data have been converted and normalized to U.S. dollars.

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2. Includes, for example, U.S. Securities and Exchange Commission's Forms 10-K, 10-Q, and 20-F (which must be submitted by all "foreign private issuers" that have listed equity shares on exchanges in the United States).

3. Subscribers to Alphacution's Premium Content Library receive access to detailed output from individual and composite models.

DATA SAMPLE

The specific chronology for the modeling and study of the global IT services sector comes off the back of Alphacution's 2016 global banking technology spending report.[4] In that study, Alphacution predicted that software would become the largest component of total technology spending in the global banking sector by the end of 2018, moving from its 2015 penetration of global bank total cost of ownership (TCO) of nearly 29% to more than 32% over the upcoming two to three years (Figure 1). Of course, assessing the impacts on computer hardware and other technical infrastructure spending are intimately intertwined in the goals here as well.

Figure 1: Global Bank Sector Model Sample (58) Enterprise TCO by Components, 2005 to 2015
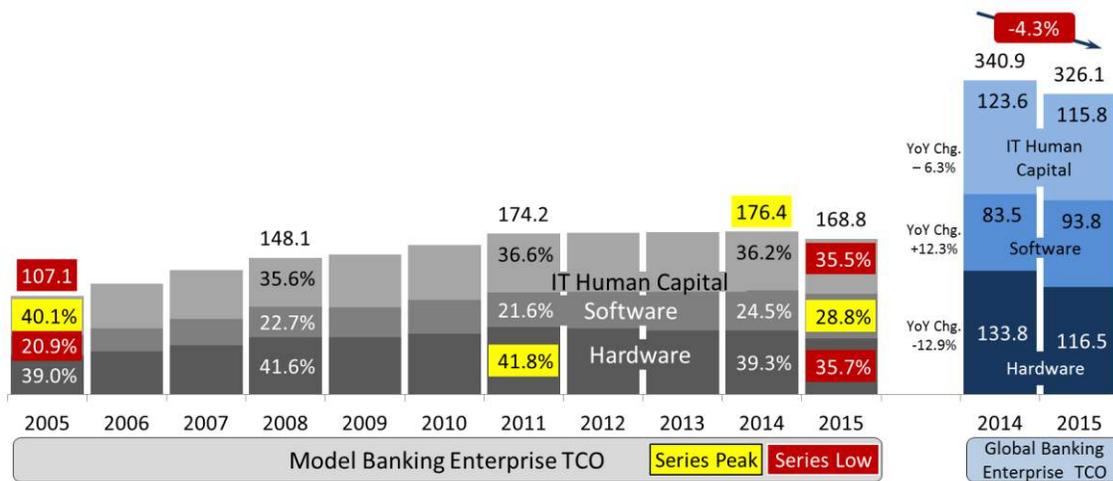
Source: Alphacution, company data

With managed services, IT outsourcing, and business process outsourcing already embedded in the prevailing themes for large banks, insurance companies, and asset managers, Alphacution concluded that it would be valuable to take a comprehensive look at a grouping of the largest public companies in the IT services sector.

For this study on the composite IT services profile, Alphacution developed 21 core and six supplemental models from a selection of public IT services and related companies (Figure 2).

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4. "Quantifying the Transformation: Benchmarking Enterprise TCO for Global Banks," Alphacution, June 2016.

Figure 2: Select Attributes of 21 Global IT Services Core Models and Six Supporting Models

	FYE	Company	Home Country	Currency	Range
Core Models	Aug	Accenture plc	Ireland	USD	2005-2016
	Dec	Atos Origin	France	EUR	2005-2016
	Dec	Capgemini SA	France	EUR	2005-2016
	Sep	CGI Group Inc.	Canada	CAD	2005-2016
	Dec	Cognizant Technology Solutions Corp.	United States	USD	2005-2016
	Mar	Computer Sciences Corp. (CSC)	United States	USD	2005-2016
	Dec	EPAM Systems, Inc.	United States	USD	2007-2016
	Dec	EXLService Holdings, Inc.	United States	USD	2005-2016
	Mar	Firstsource Solutions Ltd.	India	INR	2006-2016
	Dec	Genpact Ltd.	Bermuda	USD	2005-2016
	Jun	HCL Technologies Ltd.	India	INR	2006-2016
	Dec	Hexaware Technologies Ltd.	India	INR	2005-2016
	Mar	Infosys Ltd.	India	INR	2005-2016
	Mar	Luxoft Holding, Inc.	United States	USD	2013-2016
	Mar	MindTree Ltd.	India	INR	2006-2016
	Oct / Mar	Mphasis Ltd.	India	INR	2007-2016
	Mar	Tata Consultancy Services Ltd. (TCS)	India	INR	2006-2016
	Mar	Tech Mahindra Ltd.	India	INR	2005-2016
	Dec	Unisys Corp.	United States	USD	2005-2016
	Mar	Wipro Ltd.	India	INR	2006-2016
	Mar	WNS (Holdings) Ltd.	India	INR	2005-2016
Supporting Models	Dec	Electronic Data Systems Corp. (EDS)	United States	USD	1996-2007
	Jun	EY, LLP (Ernst & Young)	UK	USD	2005-2016
	Sep	KPMG, LLP	Netherlands	USD	2005-2017
	Jun	PricewaterhouseCoopers (PwC)	UK	USD	2005-2018
	Dec	Sapient Corp.	United States	USD	2005-2013
	Mar	Satyam Computer Services (Mahindra Satyam)	India	INR	2009-2012

India-Headquartered Sample

Source: Alphgcution, company data

A majority of the core models have been developed for the 11-year period from 2005 to 2016; each contains as much detail about headcount, revenue composition, service offerings, client composition, operating expenses, and technology assets as the transparency found in publicly available reports provide. The supplemental models—some of which are based on private professional services companies—tend to cover a more limited range of time and/or depth of detail relative to the core individual models and composite sector profile modeling.

For the 12 companies in Alphacution's sample that provide client-centricity data, total clients (including an unknown level of overlap) stands at 8,760 for 2016—up five-fold from 1,800 in 2005. This tally is equivalent to over 20% of the publicly listed companies in the world (43,192) as of 2016. The 11-year compound annual growth rate (CAGR) for revenue and headcount for our IT services sample have been consistently strong as well, at 7.4% and 11.9%, respectively. The average company in our sample has grown to 120,005 employees as of 2016, up 239% from an average of 35,356 in 2005.

In terms of the relationship between Alphacution's data sample and the entire global IT services sector, we offer the following context: Indian IT research specialist Nasscom estimates that the Indian IT industry will grow 8% from US$143 billion in 2016 to US$154 billion for 2017. To put Alphacution's dataset in perspective relative to these estimates, its current modeling sample includes 10 India-headquartered IT services companies representing an estimated US$44.2 billion in revenue (and 1.1 million employees) for 2016, or 31% of Nasscom's estimate for the entire industry. Furthermore, using 2016 revenue per employee (RPE) estimates—a metric that we will explore in greater depth later in the report—Alphacution estimates that there are over 3.5 million employees in the Indian IT industry as of year-end 2016.

This sketch tells us that, like many other industries today, India's IT industry is highly concentrated. Almost one-third of Nasscom's estimate for India's IT industry is represented by only 10 companies. Along these lines, the estimated revenue and headcount rankings for the core modeling sample for 2016 are as follows (Figure 3).

Figure 3: Global IT Services Model Sample (21) Ranked by Estimated Calendar 2016 Revenue
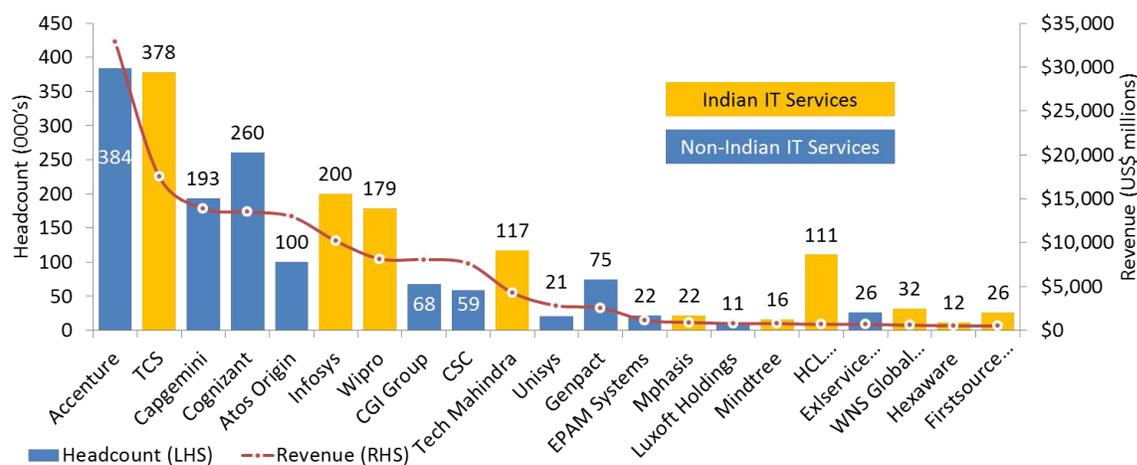
Source: Alphacution, company data

To further frame our dataset, this selection of companies had an average annual attrition of 20,881 employees and average monthly recruiting and training of at least 1,740 employees in 2016. These employees are spread across delivery locations, client sectors, and project types, and are getting billed out at rates from US$6 to US$77 per hour. In 2014, the top 13 companies in our sample (as ranked by H-1B visa applications) submitted 69,427 H-1B visa applications with an aggregate average annual salary of US$78,878 for positions requiring a visa (Figure 4).

Figure 4: Sample Ranking by 2014 H-1B Visa Applications and Average Salary

Rank	H1B Visa Sponsor	Applications	Avg. Salary
1	Infosys	23,816	$76,794
2	Tata Consultancy Services	14,096	$67,673
3	Wipro	8,365	$69,936
6	Accenture	5,509	$75,532
7	HCL America	4,749	$81,223
8	Tech Mahindra (Americas)	4,600	$73,025
15	Cognizant Technology Solutions	2,358	$70,892
23	Capgemini Financial Services USA	1,303	$95,433
26	Capgemini	1,013	$120,146
29	Mphasis	947	$70,792
30	Mindtree	932	$73,028
31	Hexaware Technologies	932	$70,352
39	HCL Global Systems	807	$80,584
	total >>	**69,427**	**$78,878**

Source: U.S. Department of Labor, Alphacution

Lastly, all but one company in our sample started with a headcount greater than 79,000 in 2005—Accenture (123,000 employees; Figure 5).

Figure 5: Global IT Services Model Sample (19) Headcount, 2005 to 2016
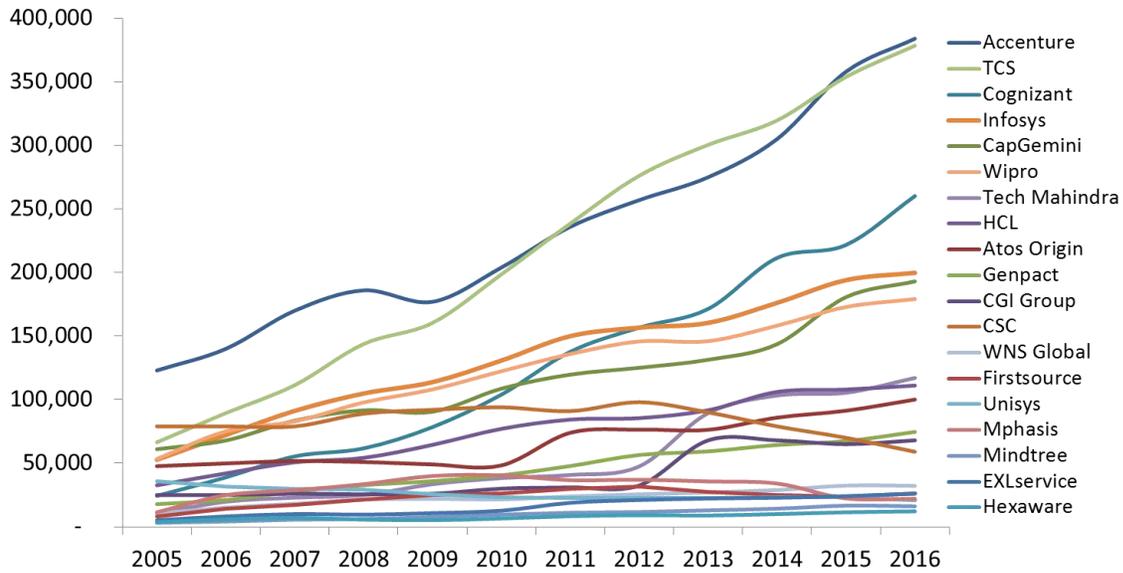
Source: Alphacution, company data

SETTING THE BASELINE

No baseline assessment of the recent history, current fortunes, and future prospects for IT services is complete without a clear outlining of core drivers, further delineated here into tailwinds and headwinds. The tailwinds are clear. In fact, we could argue that there was originally—and there may still be—only one: labor arbitrage. Growing demand for cheap labor to service typically commoditized functionality and workflows has been the primary driver of revenue growth. However, a second, arguably less substantiated tailwind comes from a growing expectation that outsourcing might satisfy both variables in the "more-for-less" equation that is so central to the current landscape—that outsourcing could also enhance the performance in the areas of technical infrastructure, software development, and business process management.

By default, the roster of headwinds includes threats against the cost savings and performance drivers. These primarily include employee attrition, retention, recruiting, and training at increasing scale; inherent pricing challenges given a highly efficient market segment; and the challenging prospects for providing services targeted higher in the "functionality stack"—the less commoditized services that bring better pricing and higher profit margins.

TAILWINDS

Growth in global IT services revenue has increased consistently for 11 years straight, starting at the beginning of our study period in 2005. India-headquartered companies—a total of 10 in our core sample—have been driving a greater, if not disproportionate, share of topline growth relative to non-India-headquartered firms. Not to be left out of the party, non-India-based IT services firms have been diversifying headcount toward lower- and lowest-cost higher-education regions, predominantly hiring Indian workers. And as a response to the reaction caused by an increasingly heated and competitive Indian IT recruiting market, Indian IT services firms have begun to incrementally diversify headcount outside of India to more far-flung locales such as the Philippines or Sri Lanka.

Companies in Alphacution's IT services modeling sample generated an estimated US$141.1 billion for 2016, representing an 11-year CAGR of 7.4%. Within that total, the 10 India-domiciled companies generated an estimated US$44.2 billion for 2016, capping a searing 11-year CAGR of 16.3%. The 11 non-India companies generated the balance: an estimated US$96.9 billion, representing a respectable yet slower 11-year CAGR of 5.1% (Figure 6).

Figure 6: Global IT Services Model Sample (21) Revenue by Provider Domicile, 2005 to e2016 (In US$ millions)
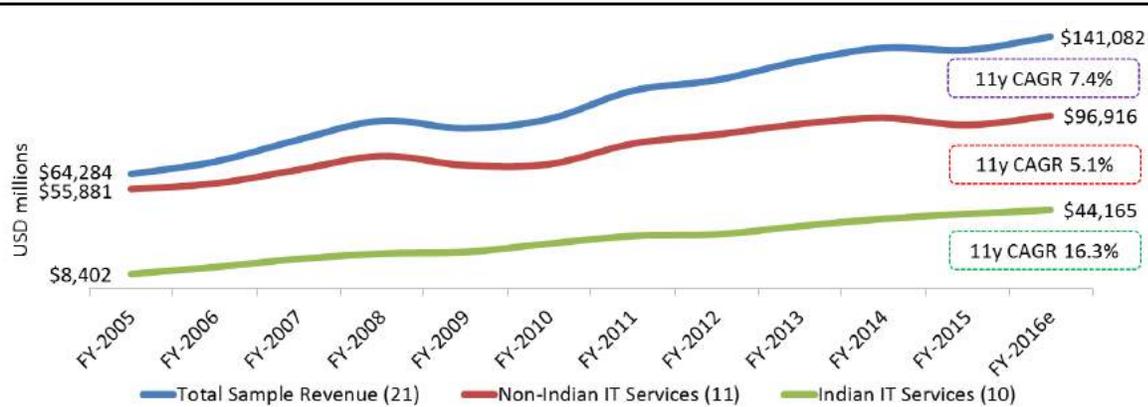
Source: Alphacution, company data

The regional perspective on revenue poignantly confirms what observers already seem to know has happened to the buyers of services—banks and others—after the global financial crisis: Some of them experienced a fair amount of operational volatility, some of which has lingered ever since. One translation for this phenomenon is that the adoption of outsourced IT services has been dominated by companies in the Americas and Europe—dominance that can be further refined to the U.S. and the U.K.—for the entire period of this study. In 2005, the combined allocation of the Americas-based and European revenue comes in at 91.6% of total sample revenue. Twelve years later in 2016, this allocation only falls to 85.1%, with the rest of the world making up the balance. Though minimal, this shift is almost entirely due to the aforementioned volatility among European (mainly U.K.-based) buyers of IT services (Figure 7). Notice the near exact tracking between the Americas and Europe through 2008, followed by more noticeable divergence ever since.

Figure 7: Global IT Services Model Sample (21) Revenue by Region, 2005 to 2016 (In US$ millions)
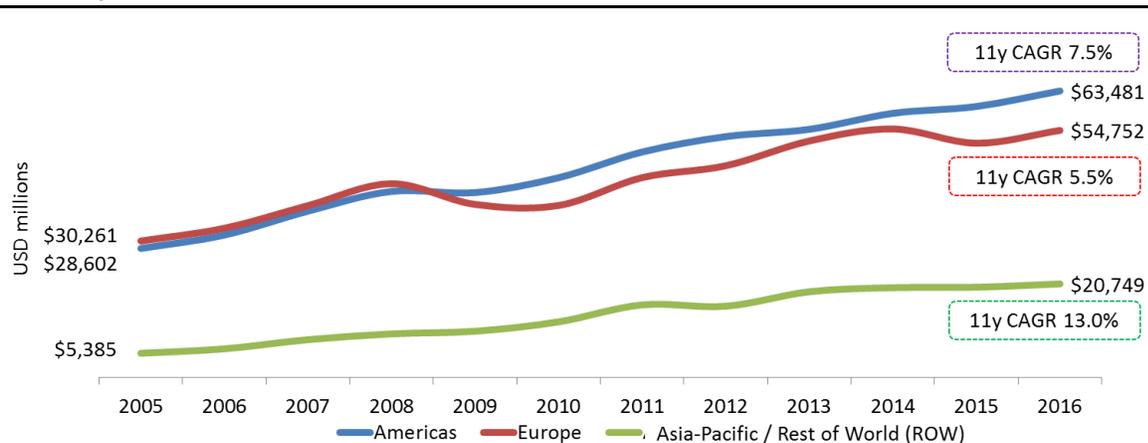
Source: Alphacution, company data

Despite the persistence in regional revenue concentration, Indian IT grew its penetration over the study period, advancing from 13.1% of total sample revenue for 2005 to 31.3% for 2016, an impressive 240% shift (Figure 8). This is particularly notable because two of the biggest non-Indian players—CSC and Unisys—are the only members of our sample that produced negative 11-year revenue CAGR. Unisys produced declining revenue in each of the 11 years analyzed for this study.

Figure 8: Indian vs. Non-Indian IT Companies' Percentage of Global IT Services Model Sample (21) Revenue, 2005 to e2016
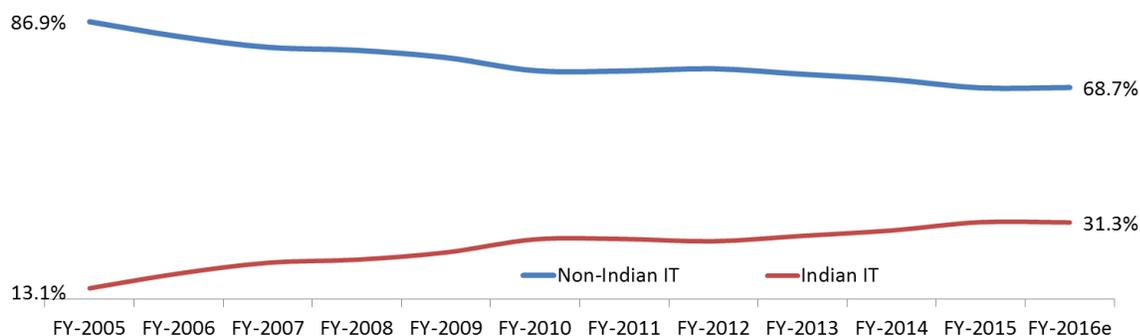
Source: Alphacution, company data

In fact, a high-to-low ranking by 11-year CAGR tends to bifurcate our modeling sample along familiar lines: It turns out that the boundary between single- and double-digit long-term growth is almost exactly the same as our groupings of Indian and non-Indian headquartered IT services players (Figure 9).

Figure 9: Global IT Services Model Sample (19) Revenue Growth, Ranked by 11-Year CAGR

Home	FX	Company	11y CAGR	6y CAGR
United States	USD	Cognizant	28.1%	19.7%
India	INR	Tech Mahindra	27.8%	24.9%
United States	USD	Exlservice Holdings	22.4%	18.1%
India	INR	Mindtree	20.3%	15.1%
India	INR	HCL	19.4%	12.1%
India	INR	TCS	17.4%	13.5%
Bermuda	USD	Genpact	16.2%	12.6%
India	INR	Infosys	15.8%	9.1%
India	INR	Mphasis	14.1%	-3.5%
India	INR	Firstsource Solutions	13.8%	2.2%
India	INR	Wipro	12.7%	3.0%
India	INR	Hexaware	11.8%	14.7%
India	USD	WNS Global Solutions	10.2%	-0.7%
Canada	CAD	CGI Group	9.4%	14.5%
Ireland	USD	Accenture	7.0%	7.3%
France	EUR	Atos Origin	6.0%	11.7%
France	EUR	CapGemini	4.4%	3.1%
United States	USD	CSC	-5.7%	-11.7%
United States	USD	Unisys	-6.3%	-5.7%
Total Aggregate Sample			**7.4%**	**6.9%**

Source: Alphacution, company data

Furthermore, revenue growth has been contingent upon a certain kind of headcount growth. Figure 10 showcases total sample head count growing faster than revenue, with an 11-year CAGR of 11.9% relative to the 7.4% 11-year CAGR for aggregate revenue.

Figure 10: Global IT Services Model Sample (21) Headcount Segmentation, 2005 to e2016
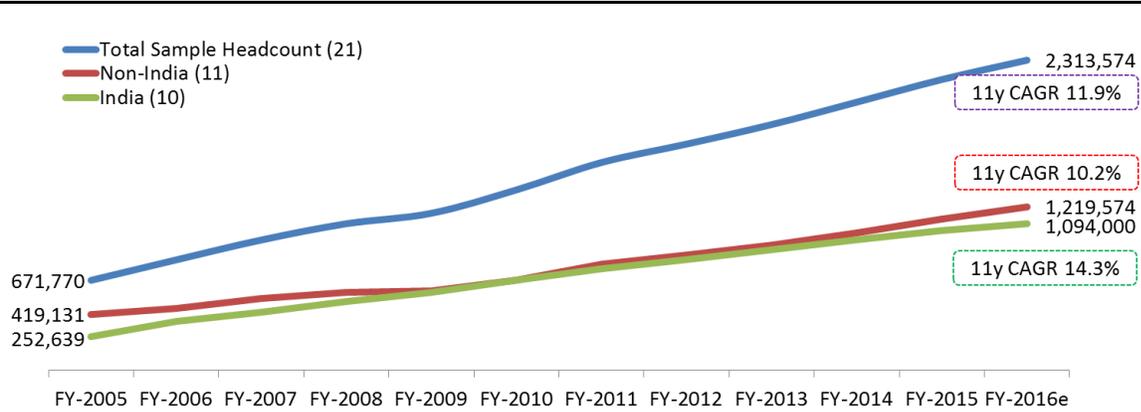
Source: Alphacution, company data

With India-headquartered IT services firms leading the pace of headcount growth and generating an 11-year CAGR of 14.3%, they are now roughly equivalent in headcount to the non-Indian firms; they will likely overtake the non-Indian sample subset around year-end 2019, assuming the recent pace holds up.

Relative growth in service offerings is another tailwind. The primary categories break down as follows as a percentage of total 2015 revenue: 60.5% (or US$80.9 billion) software-related services (i.e., application services and consulting), 22.5% (or US$30.0 billion) hardware services (i.e., managed infrastructure), 14.0% (or US$18.7 billion) business process outsourcing, and 3% (or US$4.1 billion) software products and others (Figure 11).

Figure 11: Global IT Services Model Sample (21) Services Segmentation, 2005 to 2015 (In US$ millions)
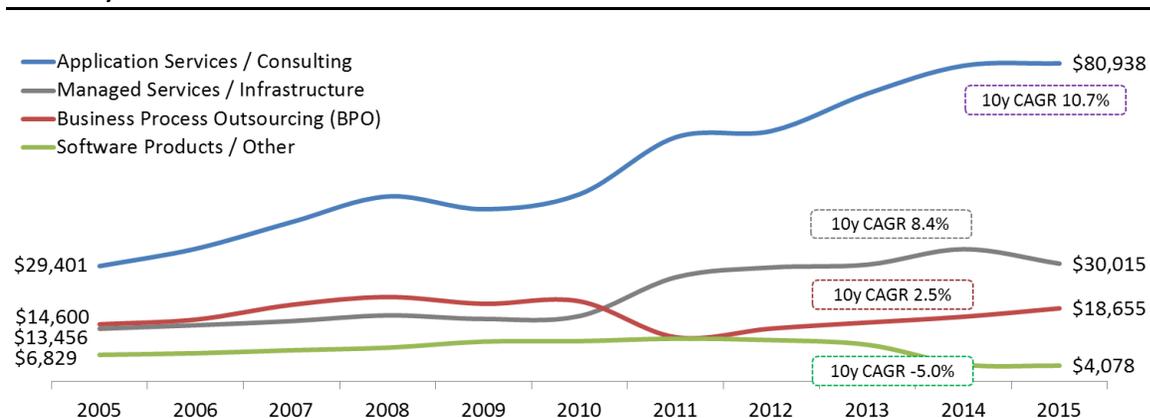
Source: Alphacution, company data

True to some of this report's opening comments from Alphacution's global banking sector study, software-related services have not only earned the lion's share of the revenue in Alphacution's sample but they have also commanded the highest growth rate, generating a 10-year CAGR of 10.7% for 2015. Note that the bulky label, application services and consulting, consists of software maintenance, development, testing, and system integration.

We believe that much of this category relates to maintenance, testing, and system integration: activities that are somewhat tangential to the clients' intellectual property accumulation or value proposition. Our conclusion here is that if software development were a more material component of the business mix, it would be highlighted boldly. Limited success in developing software products—generating a declining 10-year CAGR of -5.0% through 2015—represents a good proxy evidence for this assumption.

If large, enterprise-scale IT services firms are ever going to shed their perceived role as sources of labor arbitrage and ultimately drive their portfolios into higher-margin services, they will need to demonstrate proficiency and success in offering higher-level services, such as increasingly sophisticated software development and higher-performance infrastructure. Currently, these higher-end services continue to be handled on a proprietary basis and/or with other trusted specialty third parties. In short, as long as there seems to be a "cap" on the level of support provided by IT services, these companies' growth will continue to be contingent on proficiency in IT human capital management. We believe that altering the success of software development is going to be central to the question of whether IT services truly represent force multiplication.

As for managed services and infrastructure, growth in this category remains impressive when observed through a wider lens, generating a 10-year CAGR of 8.4% for 2015. The dip in managed infrastructure services revenue from 2014 to 2015 may represent the early emergence of increasing adoption of public cloud services, the shift to which would not benefit IT services firms (due to loss of managed infrastructure contracts).

HEADWINDS

In many ways, the following headwinds are symbols of an industry that is gradually falling victim to its own success.

Over the 11 years ending in 2016, year-over-year revenue growth has declined from a sample average of 10.7% in 2006 to 5.5% for 2016 (Figure 12). This amalgamated sector growth rate is largely due to the natural slowing of the Indian IT services firms from over 40% in 2006. Whether in the case of Indian or non-Indian IT services firms, this slowing is a predictable result of scale, with our sample slice of the industry more than doubling in revenue from US$64 billion in 2005 to more than US$140 billion in 2016 and with the Indian subset of companies more than quadrupling revenue over the period (Figure 6).

Figure 12: Global IT Services Model Sample (21) Annual Revenue Growth, 2006 to 2016
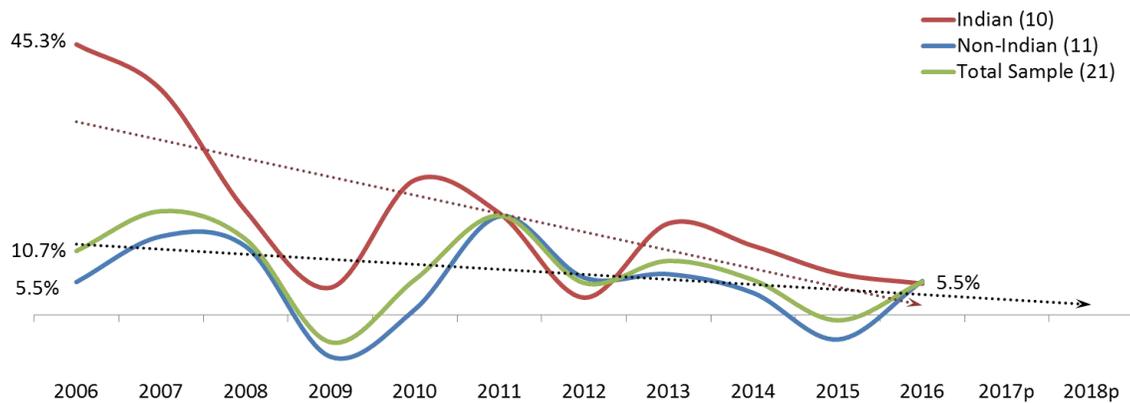
Source: Alphacution, company data

Annual change in headcount for our sample tracks with that of revenue. There is a similar gravitational pull from the more stratospheric levels of 22.7% for the 21-company sample in 2006 to a more earthly level of 6.6% by year-end 2016. In 2006, before the global financial crisis, the Indian IT services sector displayed exceptional growth, averaging over 43% year over year. By 2010, however, the headcount growth for the entire sample converges independent of headquarters location (Figure 13).

Figure 13: Global IT Services Model Sample (21) Annual Head Count Growth, 2006 to 2016
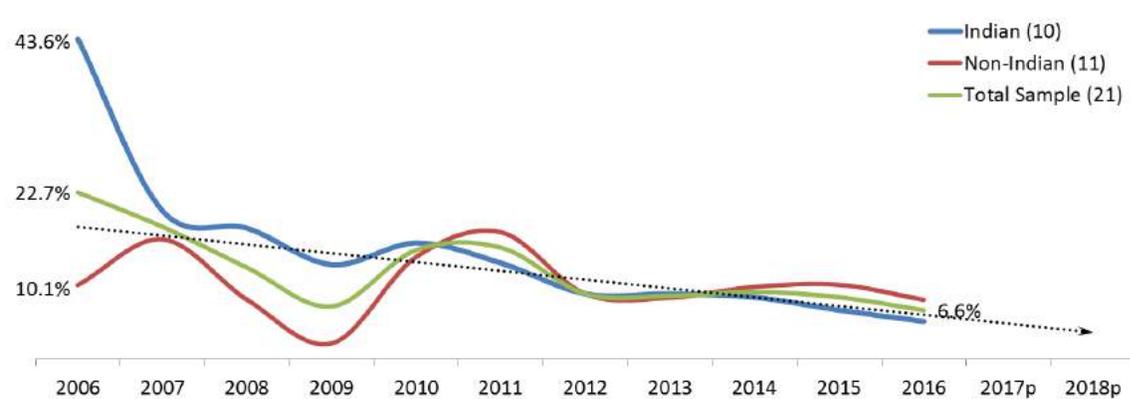
Source: Alphacution, company data

The point flows seamlessly into the next critical point: The bane of IT services firms is attrition. Annual attrition rates are high in this business sector, representing significant challenges for most IT services firms. For our core modeling sample, weighted-average voluntary attrition in 2015 was 17.3%, which is similar to where we started in 2005, with the exception of volatility during the global financial crisis from 2008 until 2010 (Figure 14).

Figure 14: Global IT Services Model Sample (15) Weighted-Average Voluntary Sector Attrition, 20015 to 2015
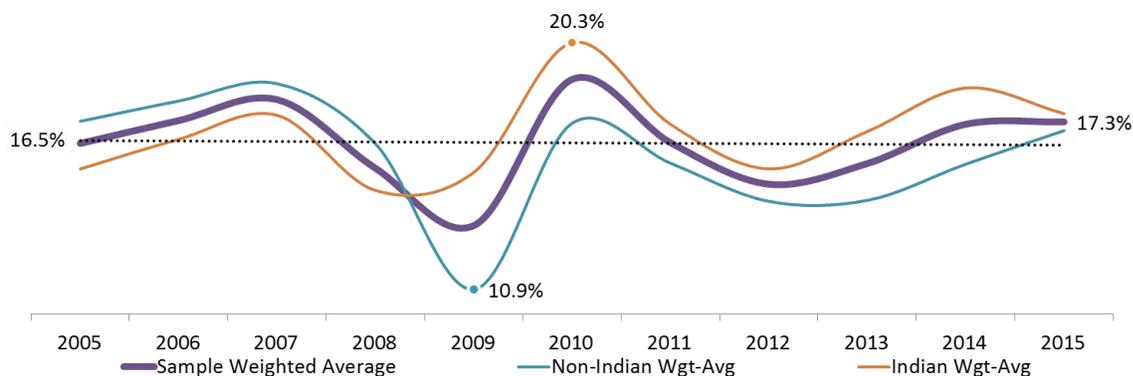
Source: Alphacution, company data

When we look at simple attrition ranges and averages for individual companies, the picture looks different. Over the 11-year period ending 2015, the range of attrition is quite large, running from lows of 10% to 12% to highs of 38% and more than 55% in one case. Despite the magnitude of this spread, simple average annual attrition rates across the 15 companies in our sample tend to stay within a fairly tight range of 20% to 22% (Figure 15).

Figure 15: Global IT Services Model Sample (15) Attrition Range and Rankings, 2005 to 2015

Headquarters	Company	Avg. Attrition
India	Firstsource Solutions Ltd.	43.5%
India	WNS (Holdings) Ltd.	36.5%
United States	EXLService Holdings, Inc.	34.4%
Bermuda	Genpact Ltd.	27.3%
India	Tech Mahindra Ltd.	20.5%
India	HCL Technologies Ltd.	18.0%
France	CapGemini SA	16.8%
India	Hexaware Technologies Ltd.	16.2%
India	Wipro Ltd.	15.9%
India	MindTree Ltd.	15.5%
Ireland	Accenture plc	14.9%
India	Infosys Ltd.	14.7%
United States	Cognizant Technology Solutions Corp.	14.5%
India	Tata Consultancy Services Ltd. (TCS)	12.4%
France	Atos Origin	11.5%
Canada	CGI Group Inc.	Not Reported
United States	Computer Sciences Corp. (CSC)	Not Reported
India	Mphasis Ltd.	Not Reported
United States	Unisys Corp.	Not Reported

Source: Alphacution, company data

Ranking average attrition rates over time yields one very important finding: The level of attrition tends to correlate to the level of service offering so that the lowest-level offerings (i.e., the ones that pay the least) are the same ones with the highest attrition. In other words, in the absence of specific hourly rates, more detailed service descriptions, and other forms of empirical evidence, Alphacution believes that there is a correlation between average attrition levels and the level of sophistication of a company's offering(s), all else being equal. Since management, culture, wage

levels, business scale, and human capital management features are also factors that can impact attrition levels, we will reserve an attempt to quantify the level of this correlation for now.

Certainly, attrition levels can and will vary among companies offering the same services. And, of course, there is room for competitive advantages to show up in lower attrition levels caused by a strong culture, smart management, and other operational intelligence. However, we still believe that there is a "default" level of attrition for each type of offering that is correlated to pay scale, which in turn is correlated to level of service offering. Beyond this explanation, a minimum level of attrition is natural for any level of service offering.

If we map attrition rates onto an industry that has grown quickly and consistently over the past decade, we arrive at the other side of the attrition challenge: recruiting. As the industry grows, the recruiting necessary to fill human capital attrition gaps as well as fill new human capital capacity needs becomes increasingly difficult. Furthermore, consider the human capital and workflow puzzles that large, quickly growing IT services firms face: Most of these firms are dealing with numerous clients across numerous industry sectors on numerous and varied projects while simultaneously working in numerous delivery locations across the globe—and with human capital that may represent dozens of different nationalities.

Based on weighted-average attrition rates from Figure 14 applied to the total annual sample headcount from Figure 10, implied net annual recruiting for our 21-company sample would have been over 400,000 employees, or 33,547 employees per month, for 2016 (Figure 16).

Figure 16: Global IT Services Model Sample (21) Implied Net Annual Recruiting, 2005 to 2016
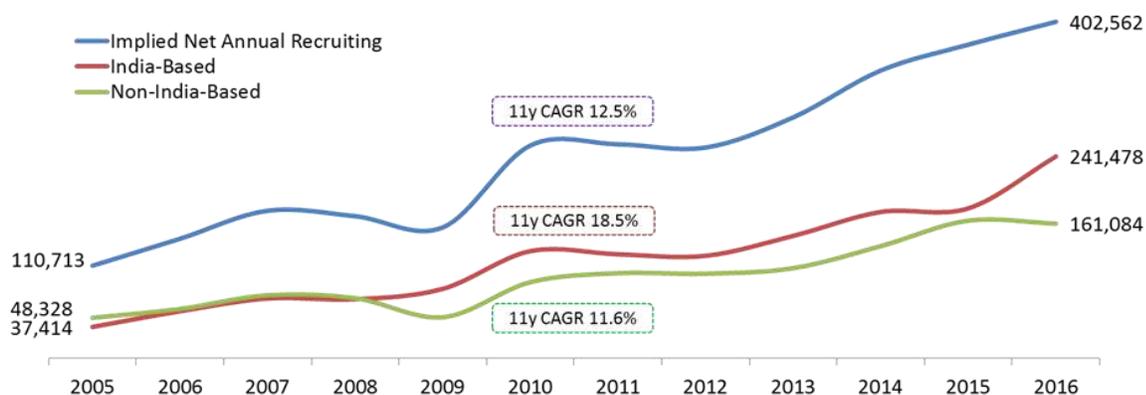
Source: Alphacution, company data

At what point does it become noticeably difficult, if not prohibitive, to respond to mounting recruiting needs? Have we already reached that point? This scenario seems quite complex, and it makes us wonder how these IT services firms do much more than keep existing employees happy and productive as well as recruit and train legions of new employees to fill attrition and growth gaps. It turns out that this perceived complexity may be an illusion.

PRODUCTIVITY PROXY

If this report is going to further support the claim that the core value proposition of IT services is something greater than the savings harvested from labor arbitrage, then we are going to have to provide evidence that these IT services firms represent a source of performance enhancement for their clients. After all, the potential for savings is useful but limited. These services—no matter the nature and location of human capital—can only be offered at a limited differential to proprietary in-house labor costs in the U.S. or the U.K. The question then is what impact do or can these services have on performance. The upside from this impact is theoretically unlimited and, therefore, much more indicative of the possibility of force multiplication.

What this report has provided so far may be objective, data-driven support for common knowledge about IT services. To support the claim of performance enhancement, this report will need to quantify changes in productivity, which is a much more fascinating component of the story.

Alphacution typically defers to RPE as an effective proxy for measuring concepts such as productivity, automation, or process innovation. After studying RPEs for dozens of companies with primary and secondary ties to the financial services ecosystem, Alphacution has concluded that each business type is correlated, to some degree, to a unique RPE level and range. As a result, RPE is among the first tools Alphacution reaches for as it seeks to "reverse engineer" the operational framework of any company, business segment, or discrete workflow. It turns out that the intelligence embedded in mass observation of RPEs is germane, whether it is used to compare a company in the current period to its former self in prior periods or to compare a company to its peers and competitors. We call the relationship between business segment and RPE level inherent productivity.

INHERENT PRODUCTIVITY

All firms have two engines of productivity—human capital and technology capital—and they are intimately intertwined. How the latter is utilized by the former will correlate to some degree with the performance as measured by revenue.

What we have discovered so far with RPE analysis is that each business segment has a fairly predictable RPE level. Moreover, the higher the RPE, the more that technology is playing a role as an engine of productivity. This is where we arrive at the concept of inherent productivity, or the idea that each business segment has a general level of automation—a key component of productivity—associated with its workflows that yields a fairly predictable level of RPE.

It is incredibly important for readers to understand that workflows with high dependence on human capital are slow to change even with increasing technology deployment. Therefore, changes in RPE for human-centric processes can be subtle and even obfuscated by factors such as pricing that have little to do with process efficiency. Point being: IT services are exactly like this. Though paradoxically supporting technical infrastructure and application services, these companies actually don't leverage much technology beyond common hardware and office software to execute their processes.

We started the modeling for this study with an eye toward quantifying IT services' spending on technology. Early on in this report, we confirmed that these companies' tech spending for internal use was minimal. For the "big four"—TCS, Infosys, Cognizant, and Wipro—total technology spending per employee (TPE) was roughly US$2,000 (Figure 17). By comparison, the least automated banks in the world—all of which are Chinese—spend roughly US$10,000 per employee on technology; the average bank spent US$28,000 per employee in 2015.

Figure 17: Big Four IT Services Total TPE, 2005 to 2016 (In US$)
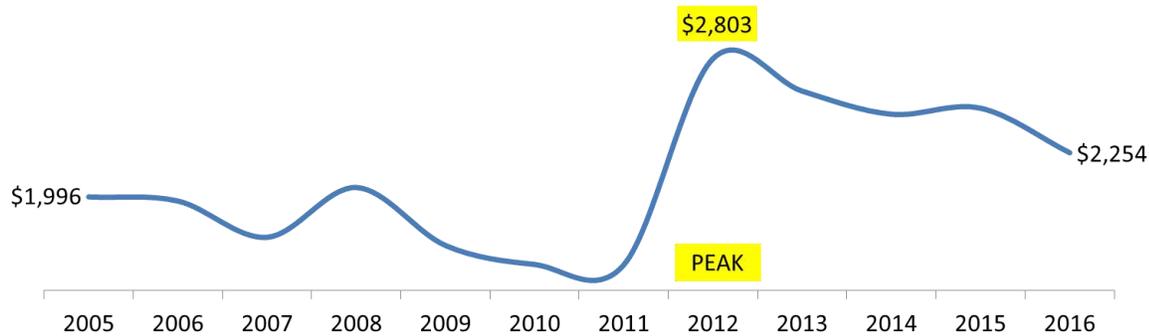
Source: Alphacution, company data

As a proxy for technology spending patterns by IT services firms, Alphacution calculated capital expenditures per employee for 18 global IT services companies from 2005 to 2015. While these investments (which also include investments in physical plant, furniture, and other nontechnology assets) were significantly higher before the global financial crisis, with figures coming in at nearly US$6,000 for 2005, recent capital expenditure investments have fallen to nearly half of that level, coming in at just under US$3,500 for 2015 (Figure 18).

Figure 18: Global IT Services Model Sample (18) Capital Expenditures per Employee, 2005 to 2015 (In US$)
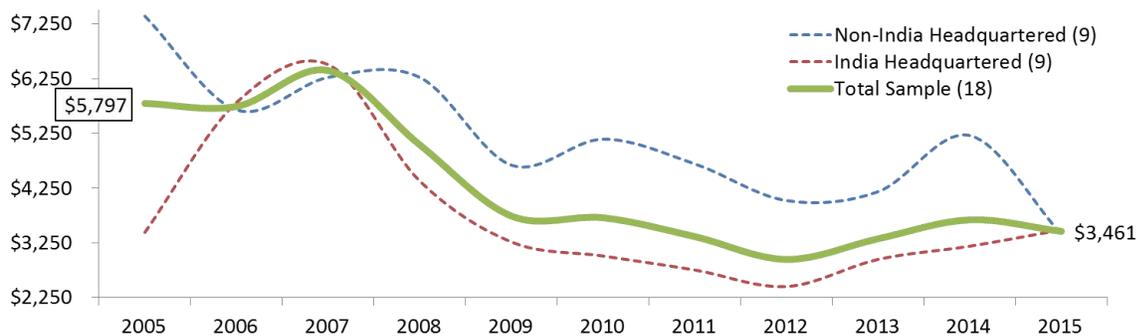

Source: Alphacution, company data

Human capital is notoriously inefficient relative to technology capital. Behavior modification is a slow and often painful engagement. Process re-engineering via collaboration and task-level automation are primary methods of enhanced productivity for human-centric process efficiency.

Only through process replacement—by wholesale shifting of the bias from human capital toward technology capital—can RPE be materially impacted in a short amount of time.

A fascinating example of the concept of inherent productivity comes from Hewlett Packard (HP) and the impact that both the original Electronic Data Systems Corp. (EDS) and the "new" EDS, in the form of HPE, has on aggregated RPE.

Figure 19 illustrates the RPEs of (1) EDS before being acquired by HP in 2008, (2) the impact of EDS' default RPE level on HP after that acquisition, and (3) the impact on HP's RPE after the EDS services business was spun out in the form of HPE.

Figure 19: Deconstructing Hewlett Packard Productivity—RPE From EDS to HPE, 2000 to 2016 (In US$)
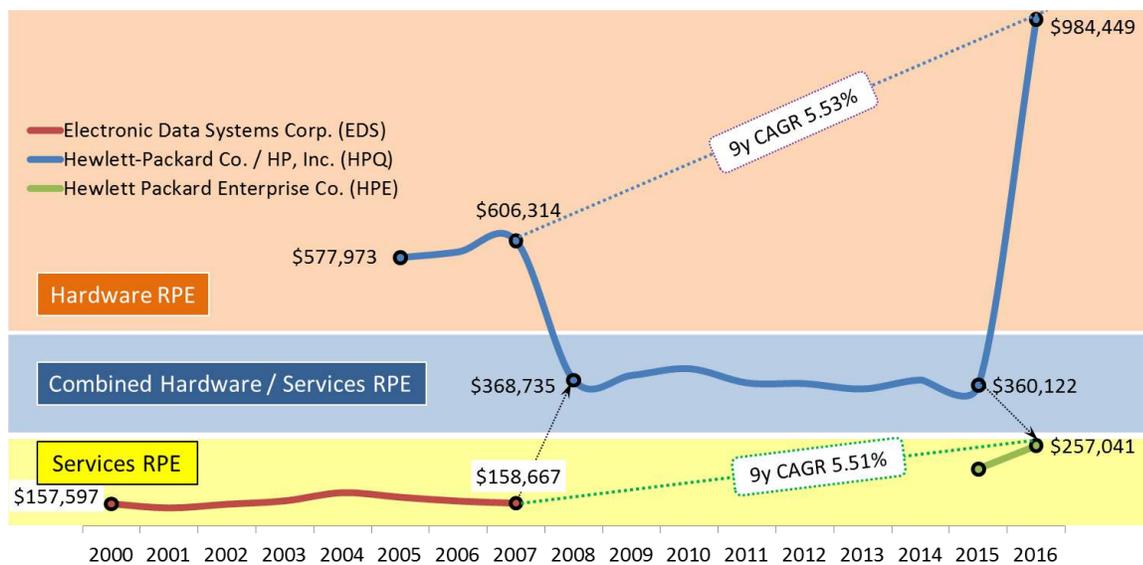
Source: Alphacution, company data

This scenario illustrates our point: The hardware business generates high RPE, in this case often greater than US$600,000. Though elevated due to presplit "window dressing," these figures are consistent with the recent RPEs of firms like Intel, Dell, and Lenovo. By contrast, the service side of the business generates low RPE, in this case usually between US$150,000 and US$260,000. These figures are also temporarily elevated but are consistent with RPE levels for Unisys, Atos, CSC, and PwC. The combined business represents the weighted-average RPE of the two business types, in this case generating RPEs around US$365,000, which is higher than but roughly comparable to those of IBM. These types of similarities have been found in all types of businesses Alphacution models.

RIGHT-SHORING, BEST-SHORING, OR RESHORING?

Two of the most significant observations from this research are first that IT services generally represent the lower extreme of all RPEs that Alphacution has modeled so far, with the IT services sample averaging nearly US$61,000 per employee for 2016 with the lowest extreme represented by WNS Global Solutions at US$18,360 for 2016. By significant contrast, the highest extreme in the financial arena is represented by high-frequency trading leader Virtu Financial, which generated RPE (on adjusted net trading revenue) of US$2.8 million for 2016.

The second significant observation is that India-headquartered IT services firms show a distinct RPE level relative to non-India headquartered firms. This is the primary reason that Alphacution is presenting many of its findings here in terms of India versus non-India. However, headquarters location is not the true source of an inherent level of productivity. Instead, the allocation to certain workforces—because of the tasks that they perform, and therefore, what they get paid—has the most significant impact on this productivity metric. It turns out that the firms with high allocations to Indian labor tend to have lower (sometimes the lowest) RPEs.

Figure 20 illustrates this point clearly. RPEs of these two segments started out with a stark, four-fold difference between them at the beginning of the study period in 2005, but they have been converging consistently ever since. Though the Indian firms have been gradually increasing RPE at a steady 11-year CAGR of 1.8%, which is a solid nod to their progress in achieving greater technical leverage, the non-Indian group has been sliding in the opposite direction, producing an 11-year CAGR for RPE of -4.6%. When these two components of our sample are aggregated, the total sample produces an 11-year CAGR of -4.0%.

**Figure 20: Global IT Services Model Sample (21) Weighted-Average RPE, 2005 to 2016 (In US$)**
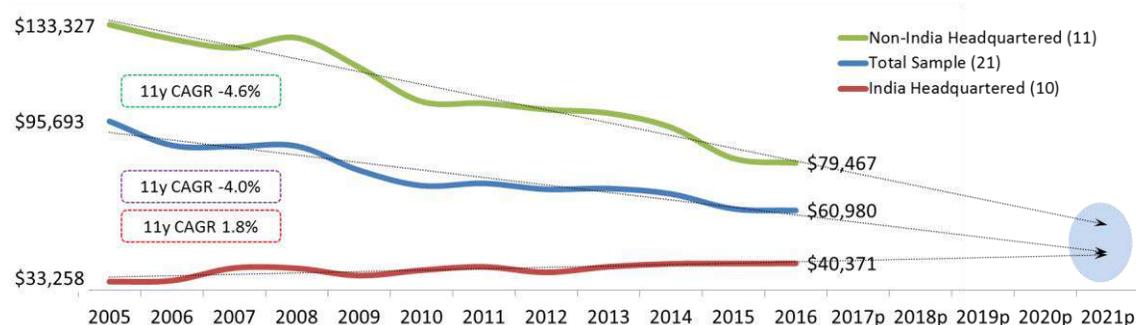
Source: Alphacution, company data

Alphacution predicts that, at this pace, the RPEs of the total sample will converge in a five-year period ending 2021. The reason for this is that no matter where these firms are headquartered, many of them retain high headcount allocations in India, where there is significant pricing efficiency. But this observation tells us little about the potential for enhanced performance or productivity. This latter claim is largely due to the perceived difficulty in measuring productivity and the fact that few have attempted to quantify this elusive phenomenon as Alphacution has.

The data is clear on the relationship between RPE and concentration of headcount to lowest-cost cohorts independent of headquarters location: For example, Cognizant and EXL Service

Holdings—both U.S.-based IT services companies—retain a long-term average headcount allocation in India of 77.0% and 85.6%, respectively. Capgemini—an IT services firm headquartered in Paris—has dramatically increased its proportion of headcount in India from 12.1% in 2006 to 52.0% in 2016. This shift in human capital allocation has impacted Capgemini's productivity as measured by RPE, which declined at an 11-year CAGR of -6.0% (Figure 21). As a result of this one simple factor, the growth characteristics are more reminiscent of IT services companies that are based in India. Workforce location is indicative of the nature and cost of services offered.

**Figure 21: Capgemini—Impact of Allocation to Lowest-Cost Human Capital on Productivity, 2005 to 2016**
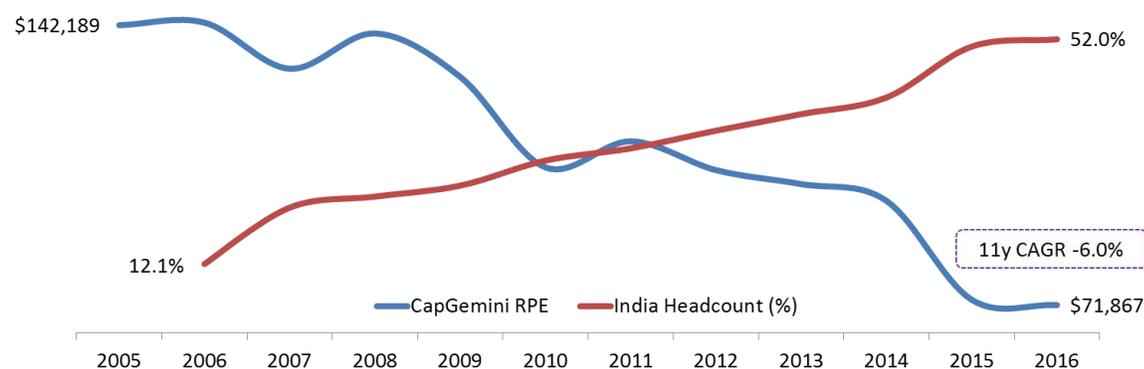
Source: Alphacution, company data

All told, this evidence demonstrates that the level of process efficiency in IT services has become less about whether the firm is based in India and more about fit between service portfolio and the skills mix to support that services portfolio. If we turn back the clock to the early 2000s, there used to be plenty of experimentation with more precise industry lingo—using terms such as "right-shoring," "best-shoring," or "reshoring,"—to describe and imply an IT service company's optimization of human capital location and skills mix. Unfortunately, the reality appears to be that IT services has become more about achieving the same result at the lowest price or "cheapest acceptable shoring."

PARADOX FOR PERFORMANCE ENHANCEMENT

The case for labor arbitrage as the core value proposition seems like a stacked deck so far. Despite all that, there is a case to be made in support of the performance enhancement argument.

Fixed-price contracts have been on the rise relative to time-and-materials contracts. This is the same as saying that there has been a notable shift in project management risks from client to provider. In turn, fixed-price contracts have had a significant impact on project management strategies and cost controls. In part, this would then lead to greater pressure on human capital cost controls, which further leads to increased allocations to lowest-cost human capital markets (Figure 22).

Figure 22: Global IT Services Model Sample (Six) Proportion of Fixed Price Contracts, 2005 to 2016
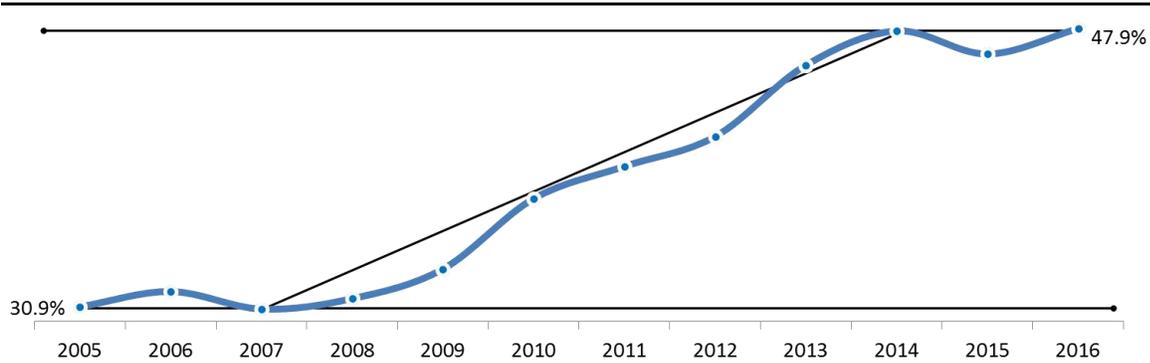
Source: Alphacution, company data

There have been positive knock-on effects from this development. The first has been to foster greater efficiency in market pricing. Based on output from 13 of our IT services models, we already know that total human capital costs average 54.5% of total revenue (ranging from a low of 32.4% to a high of 74.2%).

This is a very efficient market, particularly since so many firms are competing for talent, so not only are human capital costs highly competitive but contract pricing is also very efficient. On average, revenue tends to run in a tight range between 1.7 and 2.0 times compensation. Moreover, improving market efficiency since 2012 is illustrated by the upward-sloping, low-volatility ratio of RPE to average compensation (Figure 23).

Figure 23: Global IT Services Model Sample (12) Market Efficiency—Ratio of RPE to Average Compensation, 2005 to 2016
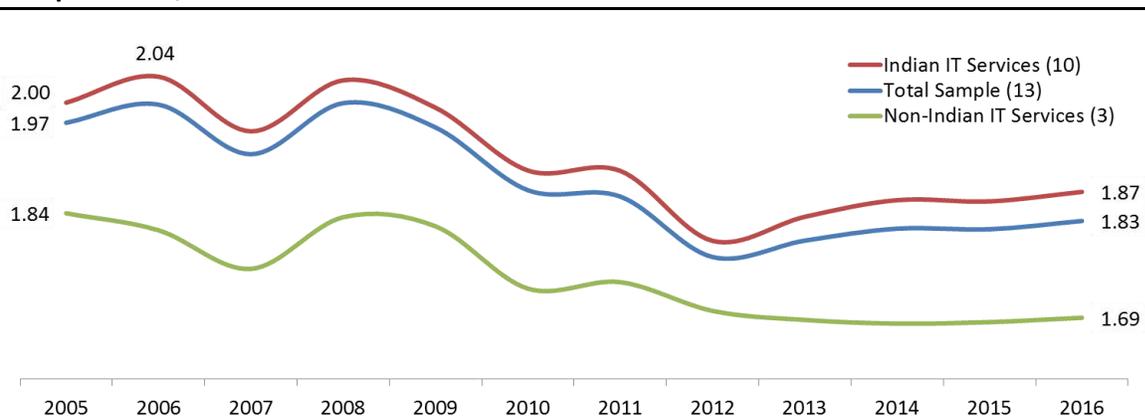
Source: Alphacution, company data

The upshot of shifting contract terms and improving market efficiency has another silver lining: It has forced IT services firms to focus on their own productivity. Cognizant is the best example of this. Three IT services companies—including HCL and EXL Service—grew RPE on a year-over-year basis in nine out of the 11 years ending 2016. Of those, Cognizant accomplished this feat at a scale of 260,200 employees for 2016, which is more than twice and 10 times the other players,

respectively. Up over 42% to nearly US$52,000 with an 11-year CAGR of 3.3%, Cognizant provides solid evidence that performance enhancement is definitely part of the story (Figure 24).

Figure 24: Cognizant RPE, 2005 to 2016 (In US$)
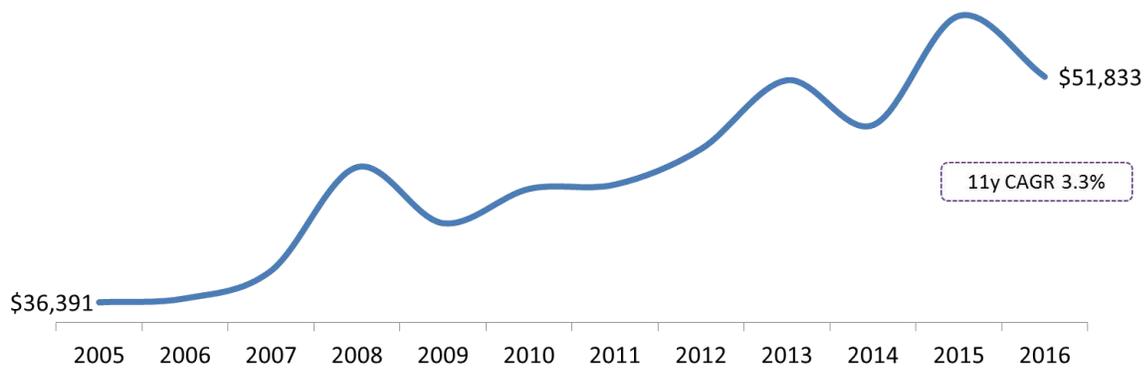

Source: Alphacution, company data

The paradox is that the benefits of improved process efficiencies fall directly to the provider. But do these benefits somehow transfer to the client as well? And if so, how?

FINANCIAL SERVICES IMPACTS

IT services has penetrated the financial sector more than it has any other in the global economy. With Alphacution's 18 core models providing revenue segmentation details, we estimate that revenue from banking and financial clients has grown at a steady 11-year CAGR of 1.8%, increasing its share of IT services revenue from 25.4% in 2005 to 30.9% by the end of 2016 (Figure 25). As a portion of total sample revenue, this translates into US$39.1 billion in overall IT services spending by the financial sector for 2016.

Figure 25: Global IT Services Model Sample (18) Share of Revenue From Global Financial Services Industry
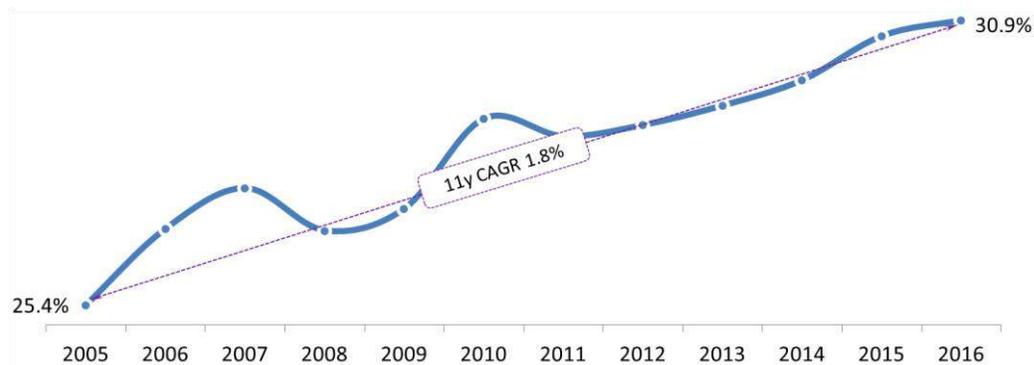

Source: Alphacution, company data

Interestingly, the pace of IT services adoption did not change after the global financial crisis. Both 11- and seven-year CAGRs are the same for this time series, coming in at 1.8%. This tells us that while the drivers may have shifted and intensified for financial clients, due largely to increased regulatory requirements, the adoption is much more methodical than spontaneous. This is good news for IT service firms, particularly given the increasing need to reduce legacy solutions and lower-level process costs.

SAVINGS FOR BANKS

How much can banks save by outsourcing technical infrastructure, application services, or certain business processes? Leveraging the modeling from Alphacution's global bank study, average compensation per employee for large banks was US$115,047 in 2016. By comparison, average compensation for IT services was US$26,208 for 2016; the average for Indian and non-Indian companies is US$20,323 and US$41,399, respectively (Figure 26).

Figure 26: Global IT Services Model Sample (15) vs. Global Banks Model Sample (58) Average Annual Compensation, 2005 to 2016 (In US$)
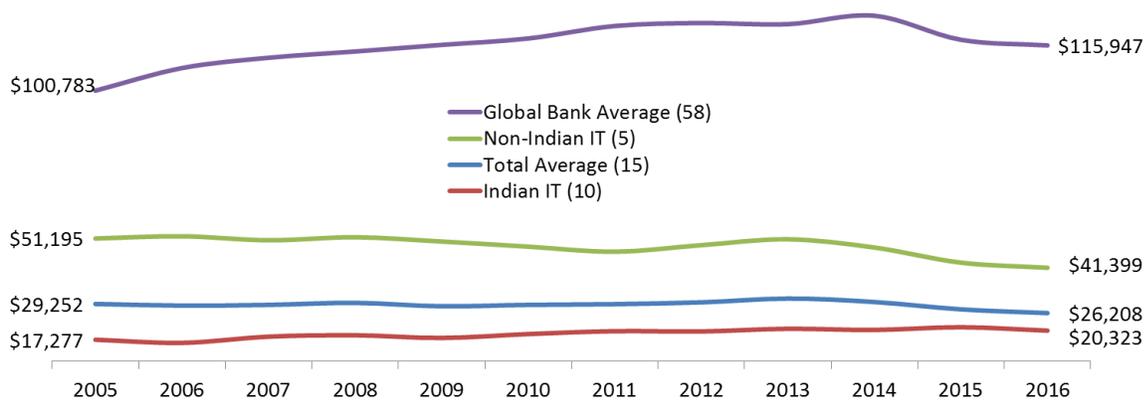
Source: Alphacution, company data

Given these figures, Alphacution estimates that the differential between in-house bank and outsourced IT services costs averages 73.7%. Savings of 80% is possible with Indian firms, and savings of 58.3% is possible with non-Indian firms (Figure 27).

Figure 27: Global Banks Model Sample (58) vs. Global IT Services Model Sample (15) Ratio of Average Annual Compensation, 2005 to 2016

| Relative to 2016 Bank Proprietary Costs		
Cost	Segment	Savings
41.7%	Non-Indian	58.3%
26.3%	Total	73.7%
20.0%	Indian	80.0%
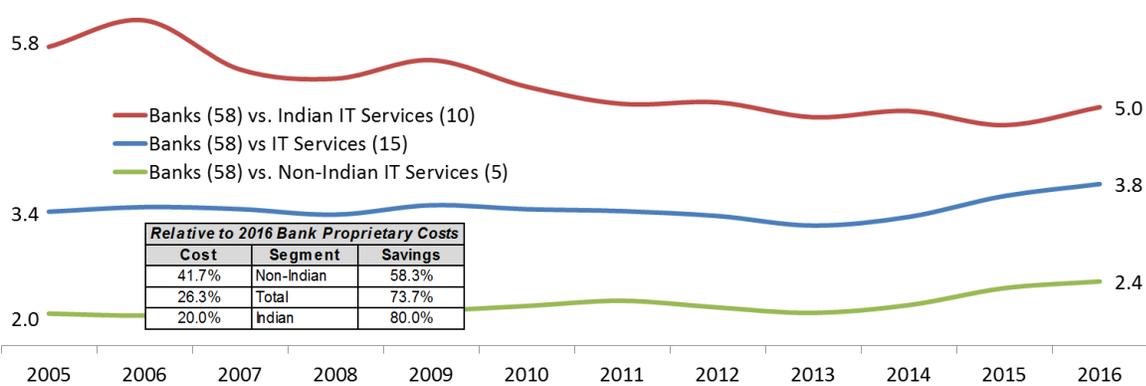
Source: Alphacution, company data

These are material results, at least theoretically. However, if a bank can reliably save between 60% to 80% relative to proprietary costs, will it care if the savings stop there? Is this the totality of the "force multiplier" effect to which Mike Lawrie is referring? Or is it necessary to expect additional benefits, such as improved performance?

IMPROVED PERFORMANCE FOR BANKS

Though it is difficult to quantify such impacts, given the extent to which global banks now rely on IT services—arguably as much or more than any other type of supply chain counterpart—the authors must give them some credit for helping banks improve their own productivity. We believe that this impact can be illustrated by global banks' strong growth in RPE over the decade beginning in 2005, with a 10-year CAGR of 2.78% (Figure 28).

**Figure 28: Global Banks Model Sample (58) RPE by Region, 2005 to 2015 (In US$)**
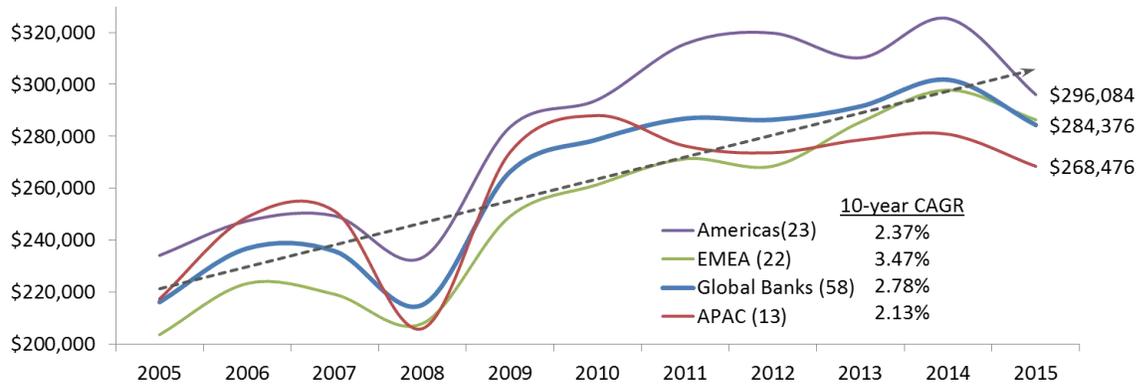
Source: Alphacution, company data

RESETTING THE VALUE PROPOSITION

One of the ubiquitous symbols of the present era is the need for business transformation, preferably of the digital variety. And despite some hype around concepts such as blockchain or artificial intelligence, digital transformation continues to be as important today as it was in 2015 when it too was undergoing its own hype cycle.

For those tasks and workflows that have become sufficiently democratized or commoditized to offer little competitive advantage or limited intellectual property, financial firms should adopt tactics to reallocate resources to more differentiating activities.

Legacy infrastructure maintenance, legacy software maintenance, integration of common software packages, and execution of low-level tasks should be at the top of the list for outsourcing. With few exceptions—where latency, high-performance computing, and/or other customized infrastructure configurations are critical to preserving competitive advantages—banks need to migrate as much focus as possible higher in the stack to everything that sits on top of the infrastructure. In other words, they must become dedicated to establishing functionality that comes from proficiency in "intelligence processing" (Figure 29).

Figure 29: Moving Higher in the Stack—Resetting the Value Proposition
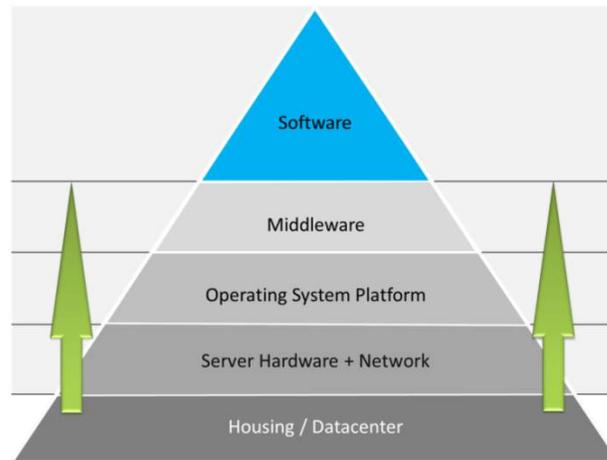
Source: Alphacution

In practice, this means maximizing the firm's focus on dramatically improved enterprise data management, new analytics development (often with higher compute intensities and update frequencies), and enhanced user interface/user experience design.

Though the savings that can be harvested from IT outsourcing (a form of force multiplication in its own right) can be material, the bigger opportunity is to maximize resources focused on differentiating functionality that truly can provide significant upside.

There are subtle risks here: When you outsource tasks or workflows to third parties, you are essentially relinquishing the opportunity to innovate around those tasks, functions, and workflows. While there may be great savings achieved in the short term with the adoption of outsourcing solutions, greater, long-term opportunity costs may be incurred as well. In short, firms must pay very close attention to the sources of their value proposition and competitive advantage.

CONCLUSION

Banking, financial services, and insurance companies in particular represent the greatest aggregate source of revenue for IT services firms, such as TCS, Infosys, Cognizant, and Wipro. By most measures, IT services firms are here to stay—a permanent fixture in the growing global financial supply chain. Based on its modeling of both the banking and IT services sectors, Alphacution estimates that banks spent US$22.5 billion or 24% of a US$93.8 billion software budget with the IT services sector in 2015, all while enjoying US$63 billion in theoretical savings.

Labor arbitrage remains the primary driver for the adoption of IT outsourcing. A significant concentration of employees in low-cost and higher-education locales, predominantly in India, but increasingly located in Eastern Europe and parts of Asia, such as the Philippines, easily underscores this point.

This fact needs to change. Attempts to move beyond the labor arbitrage rationale are ongoing, with many IT outsourcing firms seeking to win engagements by applying their expertise to more high-end software development. Shortcuts to achieve altered perceptions and realities do exist, are often viable, and have ample precedent: buying a smaller player with the requisite expertise and a strong client track record, for example. This well-worn play has contributed to growth metrics over the past decade and will likely continue to do so. While these are solid strategies, significant impediments exist.

IT services face several natural challenges. Most of these are related to human capital management, with attrition, retention, recruiting, and training being principal among them and increasing in scale. Diversity of the workforce (by country, nationality, and language) and fragmentation of workforce by location lengthens the list of natural challenges. Speaking of which, the work is also fragmented with a multifactor matrix of industries, clients, projects, delivery locations, and others.

Meanwhile, newer challenges complicate the picture further: A global roster of IT services firms is more fiercely competing for the same talent, the same clients, and the same projects—with many large firms establishing their own vertically integrated operations in India. Competitive pressures yield market efficiencies but also cause pricing inelasticity.

Smaller, specialized development shops tend to win a lot of the higher-end business that the larger firms covet. Of course, many of the more technologically advanced clients keep much of their high-end software development in-house principally because that's where they perceive their "special sauce" to be. And the growing pace of cloud and related public infrastructure offerings signals that maintenance of proprietary infrastructure has likely entered a long decline.

IT services companies still need to engage in continual improvement, to figure out how to be more efficient and more agile, and to do more with less—despite the long list of challenges. When using RPE as a measure of technical leverage and as a proxy for productivity, several IT services firms are achieving process efficiencies over and above the people challenges. Of the biggest players, Cognizant and Infosys stand out on the basis of RPE growth.

Consistent RPE improvement is a significant accomplishment for IT services firms, as it is for any large, human-centric organization. Consider the idea that it is easier, faster, and cheaper to build

anew than to renovate. This is the same as saying that there is a natural preference for process replacement over process re-engineering when seeking opportunities for performance enhancement. This is also to state a preference for technology capital over human capital. But in the absence of viable replacements (for discrete functions or wholesale workflows), business managers and their service providers need to engage in the difficult work of refining human-centric processes—the immutable reality for IT services firms.

Many IT services firms in our sample have found ways to improve productivity in the face of scant resources for automation technologies. The reason IT services firms are able to harvest efficiencies and therefore indirectly promote performance enhancement is that their businesses are not quite as complex as the "multifactor matrix" description provided earlier. They are engaged in maintenance, integration, and testing of similar software platforms across industries and clients. Much of this is legacy work; that which can safely be outsourced without intolerable risks of leaking intellectual property outside the enterprise. The same goes for maintenance of largely legacy infrastructure.

THE FORCE IS WITH YOU

Despite the authors' initial reaction to Mike Lawrie's statement—that it was one of typical marketing hyperbole—and this report's efforts to discount such claims, we have ultimately come to the conclusion that he is right, at least to one degree or another, depending on the specific IT services firm.

In the final analysis, over and above the potential for savings, IT services firms actually do help their clients create performance-enhancement opportunities for themselves. This is accomplished by allowing clients to offload activities that bog them down and that, in fact, get in the way of optimal focus on their true value proposition. With continued long-term success on this front, we can truly envision the emergence of a global IT services community living up to the promise of a force multiplier.

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CONTACT

For more information on research and consulting services, please contact:

Aite Group Sales
+1.617.338.6050
sales@aitegroup.com

For all press and conference inquiries, please contact:

Aite Group PR
+1.617.398.5048
pr@aitegroup.com

For all other inquiries, please contact:

info@aitegroup.com

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AUTHOR PAUL ROWADY

Paul Rowady is the founder and director of research for Alphacution Research Conservatory, the first digitally oriented research and strategic advisory business model focused on providing data, analytics, and technical infrastructure intelligence within the global financial services industry. Most recently the founding principal of TABB Group's technology, analytics, and data advisory practice, Paul has 28 years of senior-level research, technology, capital markets, and proprietary trading experience with firms like O'Connor & Associates, Quantlab Financial, and Ritchie Capital Management. He has a background in trading strategy research, risk analytics systems, and technology development. He also has specific expertise in derivatives, highly automated trading systems, and numerous data management initiatives. Paul's most recent research and consulting focus has related primarily to TCO modeling and benchmarking, navigational intelligence for digital transformation, and related techno-operational analysis of financial industry participants. He earned a Master of Management from the J. L. Kellogg Graduate School of Management at Northwestern University and a B.S. in Business Administration from Valparaiso University. He was also awarded a patent related to an event-driven financial analysis interface and system in 2009.

CONTACT

For more information on Alphacution, please visit, follow, and contact here:

www.alphacution.com
@alphacution
+1.646.661.4248
info@alphacution.com