

# Technical Notes

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The objective of these technical notes is to provide an overview of our analytical approach. We have not attempted to be exhaustive; we aim instead to highlight the principal inputs and assumptions on which our methodology is built. This chapter has six sections:

- **Scope of the study** discusses the objectives of our study and the areas it covers.
- **Guiding principles** outlines the high-level guidelines that govern our approach.
- **Sector selection** describes the process by which the sectors studied were selected.
- **Employment evaluation** discusses the methodology to determine current employment in a specific sector and the projected growth of employment in the sector to 2008.
- **Theoretical maximum** describes the breakdown of a sector in its value chain (henceforth called functions), the analysis of the global resourcing potential of each function or activity, and the three limiters of theoretical maximum.
- **Degree of adoption** discusses the methodology used to estimate the current level of global resourcing in the sector and projections for adoption in 2008.

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## **SCOPE OF THE STUDY**

This study evaluates the worldwide global resourcing of services and its impact on companies, industrial sectors, national economies, and labor markets. The time frame of the study is 2003 to 2008.

### **Overall study methodology**

The methodology is based on the evaluation of demand for global resourcing and supply of suitable labor available for global resourcing. These evaluations are ultimately available, as a result of this study, on a *per occupation* basis. Our approach is outlined below:

- We analyze representative sectors of the economy (auto, health care, insurance, IT services, packaged software (SW), pharma, retail and retail banking) to evaluate the theoretical maximum demand for employment on a functional and subfunctional level and to determine what occupations within these functions, and what fractions thereof, are amenable to global resourcing. We also evaluate the current pace of adoption by the players in the sectors.
- We analyze supply data in 36 developed and developing countries. First, we analyzed these countries to determine location attractiveness along six dimensions: cost (including wages), market location, vendor landscape, risk profile, environment, and quality of infrastructure. The six dimensions are brought together into a location cost index (LCI), which substitutes for price on the y-axis of the supply curve. Second, we evaluate the suitable labor/talent pool available on a per occupation basis. (Consequently, location cost index is occupation independent, but labor supply is expressed in per occupation terms.)

This technical note refers exclusively to the demand evaluations that are presented in the accompanying sector demand cases. Later reports will discuss our evaluation of labor supply.

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## GUIDING PRINCIPLES

**We consider any job that is not location constrained as potentially globally resourceable.** Any job considered as a globally resourceable job is by definition one that may be performed in the demand market, but which could be performed in border zones or even remotely. (See the "theoretical maximum" discussion below; any job that is potentially globally resourceable is considered in our theoretical maximum measure.) The definition of the "demand market" is determined at the sector level. For example, the auto sector considers North America as a single market, whereas the health care sector considers Canada, the United States, and Mexico as three separate markets.

**We define global resourcing as performing a service activity outside the market where it is demanded.** An activity that is potentially globally resourceable (see preceding definition) but that is still performed in the demand market is not considered to be globally resourced. For example, if a bank's operations site is in India, and it is catering to the Indian market, then the employees of that operations site are not considered globally resourced. However, if the operations site of that bank caters also to clients in Europe or the United States, the employees who cater to those clients *are* considered globally resourced. (For further discussion of globally-resourced jobs, see the section on degree of adoption below.)

**We evaluate only service-sector jobs.** Although the concept of global resourcing also applies to manufacturing, the study focuses on jobs in service activities only. The jobs in scope are not only the service sector jobs in an economy but also service employment in manufacturing sectors. Within those services, the movement of jobs has increased over the past ten years due to improvements in telecommunications and technology, which have in turn reduced costs of performing activities remotely. For this study, in sectors where manufacturing plays a prominent role—such as the auto and pharma sectors—the global-resourcing potential of the manufacturing functions is set to zero to avoid interference in the analysis. In general, there are two types of global resourcing in services: cross-cutting functional activities (e.g., IT, call centers, forms processing) performed in many industries, and industry-specific activities (e.g., x-ray reading).

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**We primarily evaluate movement from high-wage to low-wage countries.**

Countries are neither inherently supply nor inherently demand countries for global resourcing; our approach considers countries from an agnostic perspective as to their position in the global resourcing arena. However, as cost is a major driver of location decision, developed countries are likely to provide the bulk of demand for global resourcing, and developing countries provide the bulk of supply.

**We assume that demand for labor per activity is equal in both the "home" country and the "host" country.**

Capital versus labor tradeoffs and increased service levels may cause developed countries to seek more labor in developing countries than they would for performing the same activity in the home market. Productivity differences, both higher and lower productivity, between original location and new location may also influence labor demand for globally-resourced activities. As these effects can be both positive and negative, and as they are generally small, we treat this as a sensitivity issue.

## **SECTOR SELECTION FOR DEMAND CASES**

We selected the sectors using readily available US data from the Bureau of Labor Statistics (BLS) on the occupational composition of industry groups. We first identified 32 industries spanning the economy. We then used BLS employment-by-occupation data to characterize each industry's occupational distribution using high-level occupational groups (e.g., management, business and finance, sales-related). These occupations were aggregated into like categories.

Industries with similar occupational distributions were combined into "industry groups" (with a descriptive title assigned to each), and ultimately 11 distinct groups were identified. We selected specific sectors from within those 11 groups for detailed analysis based on the following criteria:

- Contribution to employment and GDP
- McKinsey and McKinsey Global Institute knowledge
- Potential (real or perceived) for global resourcing

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Eight sectors (auto, health care, insurance, IT services, packaged software (SW), pharma, retail and retail banking) were selected. Results from these sectors were used to extrapolate results for other industry groups that were not analyzed in this study in order to determine global figures for demand.

## **EMPLOYMENT**

The definition of each sector was determined through discussion with sector experts and review of previous MGI work in order to ensure consistency. For each sector, except auto and pharma, total employment data for the period 1994–2003 were obtained on a country-by-country basis for 11 countries (United States, Japan, Germany, China, India, Brazil, Czech Republic, Russia, Ireland, Mexico, and Canada). Based on the percentage of employment in the sector relative to nonagricultural employment, these values were extrapolated for the rest of the world. The extrapolation exercise considers developed and developing nations separately. For the auto sector, employment was obtained using data from the top 26 car manufacturers. For the pharma sector, employment was obtained using employment data from the top 50 companies worldwide.

Double counting of employment was avoided by considering only the employees who are directly employed in companies in that sector. Outsourced employment is not considered within the sector being evaluated but rather in the recipient sector (e.g., outsourced IT services employees in retail banking are included in the IT services sector analysis).

Projection of employment was done based on historical employment data and evaluation of the trends for the sector. For the retail banking, insurance, retail, and health care sectors, projections were done on a country-by-country basis and the values aggregated a posteriori. In the auto sector, a similar approach was used for the leading 15 manufacturers. This approach was then syndicated with industry experts to account for changes in demand and productivity improvements. For the packaged software, IT services, and pharma sectors, projections took into consideration the demand for products, a rough estimate for productivity improvements of the sector, and the correlation of these two factors with employment.

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## FUNCTIONS

Industries were broken down along their value chains, resulting in functions and subfunctions. These breakdowns are sector specific. However, several functions (e.g., R&D, sales and marketing, IT, and general and administrative (G&A) functions) appear across sectors. Other functions, such as nursing, are sector specific.

The percentage breakdown of total employment into functions was determined from publicly available data (e.g., sector associations, 10-K filings, and company Web sites) and through interviews with experts. If the functional composition of a sector changes over time due to an industry discontinuity (e.g., technological change), future demand levels in global-resourcing markets will also change. Sectors were thus evaluated for possible discontinuities, and these were taken into account in the functional breakdowns and incorporated into further analysis in the project.

If possible and applicable, functions were further divided into subfunctions and activities, and the same methodology—breakdown of employment of the functions into subfunctions—was applied. As the breakdown of functions into subfunctions cannot always be directly translated into head count (because one employee may perform tasks in more than one subfunction), the percentage numbers should be interpreted as indicative of the effort that goes into each subfunction.

## OCCUPATIONS

Employees in specific occupations perform tasks in the previously mentioned functions and subfunctions. For the purpose of this study, nine broad occupations are defined as described below:

- *Support staff.* Positions that are entry level without requiring specific training, or support staff positions that do not require a college degree (e.g., housekeeping, security). Employees in this occupation have completed a high school diploma and may have any level of work experience. Traditional functions that employ support staff in high volumes are the customer-facing functions in retail.

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- *Finance and accounting.* Positions that require training in finance and accounting. Employees in this occupation hold a college degree in accounting, finance, business administration, or economics. Functions that employ finance and accounting professionals are the relevant departments within G&A and the back offices of banks.
  - *Engineer.* Positions that require training in engineering research, computer science, IT, and related disciplines. Employees in this occupation hold a university degree in any engineering discipline (except civil engineering and agricultural engineering) or computer science and IT. Functions that employ engineering professionals are the internal IT departments in any sector and the R&D departments in packaged SW, IT services, and auto.
  - *Life science researcher.* Positions that require life science researching capabilities. Employees in this occupation hold a university degree in biology, chemistry, life sciences, or pharmacology. The functions that employ life science researchers are the R&D departments in pharma and a portion of the medical professionals in health care.
  - *Analyst.* Positions that require strong analytical skills. Employees in this occupation generally possess a university degree in mathematics, physics, or statistics. Holders of engineering degrees, if not employed as engineers, could also qualify for an analyst position. The functions that employ analysts are marketing research, software R&D, and some back-office functions (e.g., in insurance).
  - *Medical doctor.* Positions that require a university degree in human medicine. The functions that employ medical doctors are located in health care.
  - *Nurse.* Positions that require a nursing qualification. The functions that employ nursing professionals are found in the health care sector.
  - *Generalist.* Positions that do not require any specific training but require a university degree. Employees in these occupations hold a university degree in any field except the specialist degrees discussed above. Several functions employ generalists, including sales and marketing, G&A, and customer service functions.

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- *High-level manager.* High-level management positions. No specific university degree is required. All functions have high-level managers in the form of the head of the function. CEO, CFO, CIO, COO, CRO, VP (sales, marketing, product development, etc.), and managers of larger or multiple research projects in packaged SW are examples of high-level managers.

Generalists, finance and accounting professionals, engineers, life science researchers, and analysts are further divided into the following groups:

- *Young professional.* Professionals with up to seven years of work experience.
- *Experienced professional.* Professionals with more than seven years of work experience who are not involved in any managerial function.
- *Middle manager.* Professionals with more than seven years of work experience who are managing other groups of employees but do not belong to the high-level management group.

It is important to note from this breakdown that functions perceived as high value or occupations perceived as high skill are not automatically precluded from being candidates for global resourcing. Demand for global resourcing of that function or occupation and labor supply conditions in the global market for the specific skill will determine where the function or occupation will be performed.

If the occupational composition of a function changes over time due to an industry discontinuity (e.g., technological change), future demand levels in global resourcing markets will also change. This is treated as a sensitivity issue.

## **THEORETICAL MAXIMUM**

Theoretical maximum describes the percentage of a function or subfunction that may be globally resourced in the absence of supply constraints. To construct the theoretical maximum of each function or subfunction, we interviewed sector experts and determined the percentage of the positions that could potentially be performed anywhere in the world. Theoretical maximum is expressed for a sector as the percentage of total employment and as the number of employees that could work remotely.

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### **Factors that affect theoretical maximum**

Three factors explain why a function cannot reach a 100 percent theoretical maximum: physical presence, local knowledge, and complex interactions. Regulatory restrictions, which are present in one country but not in others, do not limit the theoretical maximum and are treated as policy issues that may be modified by governments. Hence, such restrictions only influence the sector's pace of adoption.

The following three factors prevent a function from reaching a 100 percent theoretical maximum for global resourcing:

- *Physical presence required to deliver to customer.* Functions that require physical presence are the most important inhibitors to a high theoretical maximum. Examples are tellers in retail banking, doctors and nurses in health care, and cashiers in retail.

The requirement of physical presence within a function is modifiable over time, particularly due to the development of technology and telecommunications. For example, the introduction of ATMs reduced the need for tellers to dispense cash. E-banking and online purchasing have modified the habits of thousands of consumers and reduced the need to go physically to banks and stores.

- *Local knowledge required.* Some functions, despite not having a physical requirement to cater to the customer, are dependent on their proximity to the consumer market. Prominent examples are marketing, product development in retail banking, and services that require knowledge of local laws and regulations.
- *Complex interactions required to create the service (as opposed to deliver it):* Certain functions benefit from complex in loci interactions, and, even though those functions could conceivably be done anywhere in the world, they are not, as this would destroy value or inhibit creative interaction. Prominent examples are high-level management teams and R&D teams.

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## **DEGREE OF ADOPTION**

Degree of adoption assesses the current and projected levels of global resourcing within a sector from high-wage to low-wage countries.

We assessed the current level of global resourcing in two steps. First, public data regarding the number of globally-resourced employees from the top players within a sector (either countries or companies) were obtained to create a large sample. Second, these values for the current degree of adoption were extrapolated to the whole sector.

In the extrapolation it was assumed that employment in developing countries will not be globally resourced due to the lack of significant cost differentials. For example, it was assumed that the cost benefits of global resourcing from Brazil to China or India (lower cost locations by a small percentage) do not justify the effort and risk associated with such a move. Then, for developed countries, we determined the percentage of adoption based on the sampling obtained in the first step. Where relevant, employment in companies was broken down into aggressive, mid, and slow adopters based on the sample.

For the projection of degree of adoption for 2008, we considered public plans for global resourcing by players. We also considered historical data for adoption whenever they were available. The rationale for the applicability of this methodology is based on the limited time frame of our study: five years. It is assumed that during this period, growth in adoption is likely to continue at the current rate as companies in most sectors (packaged SW and IT services being the exceptions) are still testing the feasibility and applicability of offshoring for their businesses.

Degree of adoption for a sector is expressed two ways: as a percentage of sector employment in developed countries; and as the number of employees that have been (2003) or shall be (2008) globally resourced.

### **Determinants of degree and pace of adoption**

Determinants of degree and pace of adoption were not set a priori but rather were collected from interviews with experts and later categorized via comparison of all sector cases. Three broad categories of determinants were identified,

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which is in line with previous MGI work on global industry restructuring: (1) sector characteristics and dynamics; (2) operational, organizational, and technical factors; and (3) legal, regulatory, social, and political factors. Each of these broad groups of determinants comprises subdeterminants.

In general, a single subdeterminant operates either as an enhancer or as an inhibitor (to different degrees) within all sector cases evaluated. However, exceptions exist where a determinant is an enhancer in one sector case and an inhibitor in another. Thus, for consistency, all determinants are expressed using neutral language. To show the impact of the subdeterminant on the sector case, each subdeterminant is marked with up to three positive symbols (+) for enhancers and up to three negative symbols (-) for inhibitors. In addition, the number of positive (+) or negative (-) symbols reflects the overall weight for the sector. Therefore, if the majority of players do not suffer from cost pressure, then the overall sector rating might be one negative (-), even though a few players in the sector may suffer very much (which at an individual level would result in a three-plus (+++) rating). A discussion of each subdeterminant follows below:

- **Sector characteristics and dynamics**

- *Cost pressure*. Refers to the pressure faced by the players in a sector to keep costs low. Although all sectors aim to achieve the highest possible margins, it is known that some sectors are subject to more cost pressure than others due to the intrinsic characteristics and dynamics of the sector. The plus (+) and minus (-) signs aim to capture the overall effect of cost pressure on the sector by taking into account both the intensity with which the average player experiences cost pressure (which could be low) and the number of players that suffer high cost pressure (which could be relatively high).
- *Cost differential (perceived or real)*. Addresses the cost differential necessary for global resourcing to outweigh any risks and challenges associated with it. This factor tends to appear as an inhibitor in sectors with strong presence in developing countries, because the bulk of employment is in countries where wages are relatively low, and there is little to be saved by offshoring to locations where costs are slightly lower still. In addition, wage inflation occurring in receiving countries for global resourcing is also starting to play a role in cost differential.

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- *Availability (perceived or real) of quality vendors.* Addresses the maturity of the vendor base in several functions. For example, it is well known that IT services, call centers, and business processes such as payroll have reputable vendors with significant experience. Such vendors are less available, or well known, in other functions such as medical transcription and x-ray reading. Consequently, this factor can act either as an enhancer or as an inhibitor.
  - *Availability (perceived or real) of suitable labor.* As with the preceding factor, similar logic applies to players interested in setting up captive centers and therefore in identifying suitable employees in the producing country. Moreover, this might also have an accelerating effect on pace of adoption if there is a lack of suitable labor perceived in the home market (e.g., in the case of SW and IT professionals).
  - **Organizational, operational, and technical factors**
    - *Global presence and experience in managing global footprint.* Refers to the overall globalization of players within a specific sector and the impact this level of globalization has on the pursuit of global resourcing of the sector. Global players tend to adopt global resourcing more easily, as they make use of local operations in setting up remote centers. Consequently, a sector such as health care, which is locally organized and focused, suffers from an inability to make use of a global footprint.
    - *Scale of business processes to be globally resourced.* A reasonable scale of a process is necessary for global resourcing to justify increased interaction costs. Similar functions might have a bigger scale in one sector than in another, thus making that function amenable to global resourcing in one sector and not in another. In addition, concentrated sectors dominated by large players tend to be more amenable to global resourcing due to these scale effects.
    - *Suitability of process to support global resourcing.* Refers to the ease of performing a service delivery or service creation process in a distributed environment. In many cases, the unsuitability of a process for global resourcing is due to legacy systems or a set of diverse business processes scattered across subunits. This scattering is usually the result of growth

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through mergers and acquisitions. As a consequence, extensive process reengineering is often required before global resourcing may be considered.

- *Intensity of paper-based processes in sector.* Refers to the dependence of processes within a sector on paper, as opposed to IT. This criteria varies widely among sectors and countries, where some have more comfortably adopted alternate electronic formats.
- *Suitability of IT to support global resourcing.* Similar to the previous processes point, but focused in the nature of IT systems in a sector. Many sectors are monolithic and not designed to support distributed service creation or delivery.
- *Alignment of management incentives with profit maximization.* Refers to the will of management to pursue global resourcing. Nonprofit players, mutual organizations, and conservative management teams tend to disregard global resourcing as a priority. Even within a company, a management team may see one function as more amenable to global resourcing, while disregarding others despite a similar potential profit increase.
- *Comparison of global resourcing return on investment (ROI) (perceived or real) with alternative profit-maximization strategies.* Refers to priority given to global resourcing compared to other profit-maximization strategies. Several sectors see alternative cost reduction options—such as centralization of operations, negotiation with unions, and automation—as more rewarding than global resourcing.
- **Legal, regulatory, social, and political factors**
  - *Access to attractive markets.* Refers to the use of global resourcing to establish a position in a country in order to gain access to that market for other reasons. This is particularly true of China and, to a lesser extent, India, where either hard regulations or at least the will to improve relations with the government drives global resourcing.
  - *Social/political position toward global resourcing.* Refers to concerns of

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players regarding the positioning and opinions of the population and governments toward global resourcing and the impact this has on a player's pursuit of global resourcing. This is intensified in cases where the government in the home market happens to be a major customer.

- *Labor market regulation in the home country.* Describes the importance of labor laws, such as those related to severance costs and unions, and other labor market characteristics to a company's pursuit of and access to global resourcing.
- *Product market regulations in the home country.* Describes product regulations in the home country that might affect global resourcing. An example is mutual medical-degree recognition among different countries.
- *Intellectual property (IP) regulation in the producing country.* In IP-intensive sectors, such as packaged SW and pharma, the enforcement of IP regulation in a producing country is a strong determinant of the pursuit of global resourcing and the selection of locations.