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# MIT TDQM RESEARCH INITIATIVE ON CORPORATE HOUSEHOLDING (CHH)



*This research is sponsored, in part, by D & B, Firstlogic, and  
Cambridge Research Group*



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## HOW MANY EMPLOYEES DOES IBM HAVE?

This sounds like a simple question. But consider the following list:

International Business Machines Corporation  
IBM  
IBM Microelectronics Division  
IBM Global Services  
IBM Global Financing  
IBM Global Network  
IBM de Columbia, S.A.  
Lotus Development Corporation  
Software Artistry, Inc.  
Dominion Semiconductor Company  
MiCRUS  
Computing-Tabulating-Recording Co.

### What is the relationship between these names?

These names are all related in some way to each other and to International Business Machines Corporation. The names include abbreviations, divisions, wholly & partially owned subsidiaries, companies that were acquired by IBM, companies that were acquired and later sold by IBM, and companies in which IBM has a majority or minority joint venture interest. The list also includes IBM's original name, *Computing-Tabulating-Recording Co.*

### So, how many employees does IBM have?

To complicate things even further, we have to consider the *purpose* of the question.

For example, an insurance company needs to set premium rates for business owner protection insurance for IBM. Which entities listed above should be included in IBM's employee count? How to avoid double counting? How to avoid undercounting?

Let's add yet another layer of complexity: changes over time. For example, at one point Lotus Development Corporation was a separate corporation from IBM. When comparing historical growth or decline in "number of IBM employees," should the current Lotus employees be counted in a total as of today? How could a meaningful comparison be made?

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**We have barely scratched the surface of a seemingly simple question, but already have a glimpse of the complexity & challenges involved in answering it.**

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## WHAT IS CORPORATE HOUSEHOLDING?

Corporate householding provides a way to manage complexities such as those above. Corporate householding informs business strategies and processes such as B2B (Business-to-Business), BI (Business Intelligence), BRM (Business Risk Management), CRM (Customer Relationship Management), e-Business, competitive intelligence, sales & marketing, SCM (Supply Chain Management), and so on. Certain types of knowledge are critical to the successful implementation of these, and other, business strategies. Specifically,

1. Knowledge of corporate relationships (& potential relationships) and structures, such as:

- Relationships within the corporation, e.g., departments, divisions, subsidiaries, branches; relationships represented by organizational charts, etc.
- Relationships with business customers, partners, and collaborators
- Relationships with suppliers
- Relationships with third-party intermediaries such as dealers, distributors, resellers, etc.
- Relationships with governing bodies
- Relationships with regulatory bodies

2. Knowledge of how, where, & why these relationships operate is also crucial to successful implementation of corporate strategies.

3. In addition, it would be important to know which lens (e.g., marketing, finance, legal, procurement, etc.) is being used to define the entities and relationships mentioned above.

The types of knowledge referred to above, are known collectively as “corporate household” knowledge. The *process* of capturing, analyzing, understanding, defining, managing, and using corporate household knowledge is known as **corporate householding**.

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### WHY IS CORPORATE HOUSEHOLDING RESEARCH IMPORTANT TO BUSINESS?

Getting a handle on the complexities of knowing the who, what, where, when, and why of every corporate relationship (and potential relationship) in a way that **allows the corporation to strategically harness this knowledge** can be a daunting task. Corporate householding research addresses this need.

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### WHAT BUSINESS QUESTIONS CAN CORPORATE HOUSEHOLDING ADDRESS?

Corporate Householding (CHH) helps answer many business questions. The degree to which CHH can do so depends on the quality of the information & data a company owns. The MIT TDQM Corporate Householding research initiative builds on TDQM's research into, and knowledge of, methods of creating and improving the quality of a company's information.

**Possible questions include:**

- What does our downstream market need from us?
- Do we know all our customer contact points?
- How do we allocate our resources to produce optimal profitability in the market place?
- Who are our most valuable customers?
- Who are our most powerful competitors?
- Which customers are also competitors?
- Who are the 'next best alternatives' available to our customers?
- What is the right level of aggregation for our CRM initiative?
- To which potential customers should we direct our marketing efforts?
- What is the long-term value of a given customer?
- How much risk is involved in issuing credit to a given company?
- Why do our internal corporate earnings reports conflict? Which is correct?
- From a financial perspective, should we treat 'Sony' and its subsidiary, *Columbia Pictures*, as one or two accounts? What is the nature of their relationship?
- Which of our customers are competitors to each other?
- Which suppliers help us increase our time-to-market?
- What trends will be affecting our customers? How will their needs change?
- How can we better manage our supply chain channels?
- Which of our divisions have business dealings with which divisions of other corporations, and what is the nature of these business dealings?

In addition to answering business questions, Corporate Householding research enables companies to **address very real business issues**. Let's look at a few.

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### CORPORATE HOUSEHOLDING RESEARCH ADDRESSES MULTIPLE BUSINESS AREAS

## Financial Risk

Corporate Householding knowledge positions corporations to effectively deal with various types of financial risk, including:

**Credit risk:** Financial institutions extend credit to a number of domestic and global organizations.

*For example:* Suppose the CIBC in Canada extends credit to IBM Canada. To evaluate the overall risk, management must look at an aggregated report showing all branches of CIBC and their businesses with all branches and subsidiaries of IBM. This can be complicated because different CIBC branches may maintain data on IBM accounts in different ways, such as using different names to refer to IBM or its branches and subsidiaries.

**Credit ratings:** Another issue involves the distinct credit ratings of a parent company and its subsidiaries.

*For example:* A firm planning to do business with Hewlett Packard Puerto Rico will find it useful to know that Hewlett Packard (parent) has a rating of only AA though Hewlett Packard Puerto Rico has a credit rating of AAA.

**Geographic risk:** When evaluating the risk of global companies, locations may cause ambiguity. Does the risk involved in a loan to a company depend on the location of a particular borrower or the location of the borrower's owner?

*For example:* Consider a company located in the US that is a subsidiary of a Japanese company, such as a Toyota manufacturing plants in the US. When is a plant considered to be a "US company" and when is it considered simply as a branch/subsidiary of a Japanese firm?

**Exchange rate risk:** When dealing with corporations globally, the currencies used often differ depending on context and on frequently fluctuating exchange rates.

## Accounting

Ambiguities arise in accounting such as calculating the total sales and expenses for a company like IBM. These ambiguities lead to questions such as:

- Does "IBM" include all of International Business Machines Corporation's branches, divisions and subsidiaries?
- When calculating IBM's annual revenue, when is the revenue from Lotus counted and when not?
- Is the revenue from IBM Columbia, a partially owned subsidiary of IBM, counted? How about the revenue streams from the joint ventures that IBM has?

Account consolidation follows some typical set of rules to resolve and sometimes take advantage of the ambiguities. But to consolidate accounts, precise definitions of each account must be known and understood. Moreover, different countries use different accounting rules.

## Sales

- The question "what is the total sales IBM had in Australia in the past year?" seems like a simple question. However it can be quite complex:  
It is not clear if computers that are ordered online from Australia, but were shipped from US, should be counted into the total sales in Australia
- Many global companies have trouble knowing the total volume that they have purchased from their vendors, because there are many independent pair-wise contracts between its subdivisions and the same vendor  
*For example:* Johnson Wax may not know how much it has bought from Dow Chemical, or how much it has sold to Walmart. Thus at the two ends of the supply chain, both the supplier and the customer may have problems identifying the total sales or the total purchase because of the inconsistencies within their systems and corporate structures. Also, purchases may be made directly (e.g., MIT buys IBM computers directly from IBM) or indirectly (e.g., MIT buys IBM computers through the local MicroComputer Company store). How should total sales of IBM to MIT be calculated?

## Licensing

Licensing questions can be quite involved:

- If MIT buys a company-wide license for Windows XP from Microsoft, is Lincoln Laboratory authorized to use the software? Lincoln Laboratory is the "Federally Funded Research and Development Center of the Massachusetts Institute of Technology."
- Must the license specifically state the cases that would apply to the Lincoln Lab? If not, what is the common guideline (if any) that could resolve the ambiguity that is not addressed in the license?

The same kinds of issues exist in other licensing arrangements, such as licensing of patents.

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**To answer questions like "Is Lincoln Lab is covered in the software license?", Lincoln Lab's legal relationship to MIT must be known (i.e., is Lincoln Lab a legally separated entity? is it a subsidiary or division of MIT?), and that knowledge must be understood & accessible.**

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## Corporate Structures

Let's use IBM as a hypothetical example of a possible corporate structure: the parent, IBM, is at the top (may be a corporation registered in Bermuda), but it does not have any real substance. Under it, there are IBM US, IBM Europe, IBM China, etc., which are called subsidiaries. Each subsidiary is a legally separated entity under the law of the country of its residence. For example, IBM China is a legally separated entity under Chinese law. Almost all contacts are at this level, i.e. by territorial authority. Then, under IBM US, there are subsidiaries such as Lotus, and divisions such as IBM New York. How to keep track of all these inter-relationships?

## Conflict of Interest

Issues arise from the laws or business practices, which state that at any one time one cannot work for both a company and a competing company. However, determining who is and who is not a competitor is not always clear-cut. Different sources would give different answers. It is particularly difficult to identify competitors for companies involved with different lines of business, such as IBM, which is a hardware company and runs a software subsidiary - Lotus.

## Customer Relationship Management (CRM)

The use of householding practices within CRM allows a product vendor to structure contact records of its customers in a meaningful way. The customer could be a retail consumer, or a corporate account.

*A simple example: Tom Jones owns a vegetable garden. Kim Jones, Tom's wife, is a flower gardener. Linda Jones, Tom's daughter, while not a gardener, loves to plant pine trees. All three of the Jones' have ordered products from Sweet Flowers seed catalog. Sweet Flowers is savvy to how its catalog is used and read in a consumer household. They have learned the Jones' try to consolidate orders when possible, to save on shipping and handling fees. Sweet Flowers is also sensitive to the issue of "contact fatigue" where sending multiple copies of the catalog to the Jones residence - one copy per customer - annoys the customer. Corporate Householding gives Sweet Flowers the knowledge it needs to ensure only one catalog is shipped to the Jones residence.*

**On the opposite end of the spectrum** is a product vendor attempting to communicate with a multi-national corporation. There may be hundreds, if not thousands, of unique contacts in the vendor's CRM system.

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**The commonality between these two examples is that corporate householding is used to both to segment and to draw relationships between customers in order to improve the effectiveness of customer communications.**

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## MIT TDQM<sup>1</sup> RESEARCH GOALS FOR CORPORATE HOUSEHOLDING

Research goals include:

- Develop vertical case studies in various industries such as healthcare, finance, technology, telecommunications, transportation, and so on
- Develop horizontal case studies across industries in areas such as risk aggregation, retail & business marketing, channel management, CRM, BI, and so on
- Identify research opportunities yielding the maximum ROI
- Capture corporate household knowledge and represent it through knowledge engineering
- Explore innovative, technical solutions that build on existing technology and that empower and enhance the business community's ability to leverage results from Corporate Householding research
- Develop value-added, effective methods of applying Corporate Householding to particular business contexts

### ABOUT MIT TDQM

The MIT TDQM program is a joint effort between research centers such as CTPID (Center for Technology & Policy and Industrial Development) at MIT, CITM (Center for Information Technology and Marketplace Transformation) at UC Berkeley, DIMC (Data Integrity Management Center) at the U.S. Naval Inventory Control Point, and industry. Industry partners such as Dun & Bradstreet, Firstlogic, and Cambridge Research Group (CRG) sponsor the TDQM program to devise practical methods for data quality improvement. Currently, TDQM research is focused on:

- Information product management
- Corporate householding
- Data quality management in the context of the lean enterprise and information supply chain management

The MIT TDQM program also provides seminar, workshops, and discussion forums for researchers, practitioners and sponsors.

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The **MIT TDQM** program is uniquely qualified to lead research and education based on its cumulated research and practice on data quality theory and implementation and the ability to leverage other MIT campus assets<sup>2</sup>. This unique combination of skills, as well as the longstanding tradition of working closely with industry, makes the TDQM program the best choice and an extremely powerful resource in competing in the marketplace.

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<sup>1</sup> Total Data Quality Management

<sup>2</sup> Key MIT resources include the Center for Policy, Technology, and Industrial Development (CTPID), the Context Interchange (COIN) research, and the Lean Sustainment Initiative (LSI).

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## MIT TDQM PROGRAM SPONSORSHIP

The MIT TDQM Program invites select organizations to become sponsors of the Program and members of the MIT TDQM Program consortium.

### General Benefits

Organizations participate in the MIT TDQM consortium for a variety of strategic reasons. Below are some of the benefits Sponsors have found attractive in their calculation of return on investment (ROI):

- 1. Interactions with TDQM directors and researchers**  
These interactions enable sponsors to implement data quality policies and strategies and to become business leaders in the data quality field. The MIT TDQM Program enables sponsors to leverage the quality of their data & information to 'leap-frog' ahead of the competition.
- 2. First-mover advantages**  
Being first-to-market carries with it significant revenue potential. For example, Merrill Lynch, of the Merrill Cash Management Account (CMA) case, was the first mover to combine checking, money market, and asset accounts. Merrill Lynch dominated the market for many years with billions of dollars of revenues before others caught up.
- 3. Opportunities that arise out of research results**  
One Sponsor, a major consulting company, capitalized on research results by applying MIT research on Aggregation, especially Account Aggregation, early on. This company marketed Aggregation as one of their top 10 services just before Financial Account Aggregation became a 'hot' topic a few years ago.
- 4. Actionable understanding of data quality issues that surface on a regular basis**
  - ✓ Operating a global business requires that organizational data be managed globally to answer both current and future global business questions
  - ✓ External audits such as healthcare regulatory commission reviews
  - ✓ Information systems projects typically reveal existing data problems, particularly those projects that are cross-functional in scope and involve multiple data sources
  - ✓ Staff identify data problems from their on-going work and develop expensive 'work-arounds' to meet their immediate needs
- 5. Participation in research workshops** to gain a deep understanding of highly effective solutions such as the Information Product methodology.
- 6. Recognition of the sponsor organization as a thought leader in their industry**, thereby enhancing their reputation in the marketplace. The annual ICIQ<sup>3</sup> and other TDQM-related events further recognize and enhance the Sponsor's reputation. One research sponsor has made participation in the MIT program a high-visibility element for its fast track managers.

In the letter and spirit of "quality means fitness for use," we at the MIT TDQM Program strive to ensure that TDQM **Sponsors** find their participation in the consortium a most rewarding investment.

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<sup>3</sup> International Conference on Information Quality



