The following article entitled, “Transforming GE Real Estate with Innovative Data-driven Decision Support” was written by Professor D.J. Power at the University of Iowa. It consists largely of an interview with the CIO of GE Real Estate.

You are required to read this article and answer the following questions.

1. What is the purpose of the data mart at GE Real Estate?
2. What decision support technologies were used and why?
3. What is the major benefit of using the new system rather than Excel for providing analytical information to decision makers?
4. How does management know which vendor to select? Explain whether you think it is difficult to change vendors.
5. What are the key IS/T challenges in commercial real estate lending, today and five years from now?
6. What problems or difficulties do you anticipate with the use of this type of decision support solution?

Do not exceed 3000 words
Transforming GE Real Estate
with Innovative Data-driven Decision Support

by D. J. Power

GE Real Estate, a unit of GE Commercial Finance, is one of the world's leading commercial real estate investors and lenders. Beginning in 2000, when Michael Pralle joined the firm as President and Chief Executive Officer and Hank Zupnick became Chief Information Officer, computerized decision support has been a major strategy enabler. Pralle has transformed GE Real Estate from a U.S. focused firm into one of the world's largest and most diversified commercial real estate investment firms. The company does business in 20 countries and has a portfolio valued at more than USD $48 billion. In 2006, GE Real Estate contributed 8 percent of GE’s total net income. Compared to 2000, net income more than tripled to USD $1.8 billion.

GE Real Estate's performance is attributed to the three pronged growth strategy that Pralle implemented: "manage the business through real estate cycles; establish a deeper presence in large, underserved countries, including Mexico and in Eastern Europe; and maximize opportunities in emerging markets, particularly India and China." To make this strategy work GE Real Estate needed to expand its use of the World Wide Web, improve computerized transaction processes and implement innovative decision support capabilities.

According to the GE Real Estate web site (www.gerealestate.com), Pralle "has used the power of technology to improve service quality in what is essentially a face-to-face business. GE Real Estate has spent $50 million on information technology since 2002. Those investments have reduced transaction cycle times by 65 percent and improved the accuracy and reliability of Real Estate deals."

The company has also used computerized decision support to improve its risk management practices. Non-performing assets were at an industry-low of 0.55 percent in 2005. Pralle "believes this risk management discipline will be a critical competitive advantage as the real estate business expands into emerging markets characterized by differing legal systems, currency regulations and concepts of property rights."
Decision Support development at GE Real Estate

As Chief Information Officer of GE Real Estate, Hank Zupnick’s challenge was to use information technology to help drive global growth. When Zupnick joined the company in 2000, he and his staff began to identify where technology could help its real estate professionals become more productive and make investment decisions more effectively. Another important application for technology was to help the firm better manage transaction risks due to incomplete or inaccurate information. Hank oversees a team of professionals located in North America, Europe and Asia, and continues to apply information technology strategically to help GE Real Estate operate more efficiently, responsively and profitably.

Since his arrival at GE Real Estate, Hank has overseen the multimillion dollar investments in technological improvements. His team has implemented a number of projects that have yielded quantifiable improvements throughout the business. By automating deal origination, approval and closing processes, the transaction cycle has been shortened dramatically and the company now responds faster to client requests. With other technology innovations, IT projects have made deal information more detailed and reliable, while the current status of each deal in progress worldwide is available from a Web portal. Decision support improvements have also strengthened GE Real Estate’s controllership capabilities by implementing worldwide financial control systems. Perhaps most important, Zupnick initiated and led projects to create business intelligence databases that enable the company to more accurately assess marketplace conditions and manage portfolio risks.

In an article at CIO.com, Zupnick explained how the CFO at GE Real Estate offered to fund a businesswide data warehouse that would help us grow and manage our global commercial real estate business, instead he chose to start with low-cost applications and built a data mart. GE Real Estate was pricing between 20,000 and 30,000 deals a year. Much of the information GE Real Estate's managers relied on was stored in spreadsheets or in hard-copy reports. Figuring out how GE's loans were performing in each particular market and what kind of risks should be factored into a $30 million deal required employees to gather data manually from several sources. "Errors are unavoidable in a manual process, and they could be costly: Misunderstanding GE's loan-portfolio performance in Denver or Dublin could mean charging a customer too low an interest rate and exposing GE to too much risk. Charging too high a rate could prompt the customer to take a lower rate from another lender."

"We decided that a data warehouse and Web-based reporting system would be the ideal solution. But we also knew it could be very expensive and time-consuming to develop, and the process is full of uncertainties." GE’s theory of technological evolution has entailed the automation of 600-plus individual transactional and servicing-related processes, which is more than a third of the company’s processes.
Interview with Hank Zupnick,
CIO GE Real Estate

In Fall of 2006, Mr. Zupnick agreed to an interview about the decision support projects that had been completed at GE Real Estate. The following answers help understand the scope and complexity of this transforming set of projects.

Q1. What is the history of the data warehouse-risk management decision support project?

Q1.a Specifically, how was the project initiated?

The project was initiated by GE Real Estate’s senior management, which includes myself, based on the recommendations of a joint IT, Risk (Credit) and Sales task force that had been exploring opportunities to use technology to grow the business.

Q1.b What problems were you trying to address?

We sought to better understand the likelihood that a loan on a specific property would be profitable by analyzing similar deals (by loan type, property type, location, ownership, tenant mix etc), local economic conditions (job growth, income growth, new construction, tax rates etc) and macro-economic conditions (interest rates, currency exchange rates etc). By better understanding the likelihood of profitability, we could better identify which loan opportunities to pursue, and optimal terms and conditions for each proposed loan.

Q1.c. What steps did you take to identify solutions? Why did you decide to build a data warehouse with Web-based reporting?

We decided to start modestly, by building a limited number of silo’ed data marts. We did this in order to validate our concepts in a relatively short and inexpensive manner, even though we knew that would increase the likelihood of future re-writes. The data warehouse framework was used to enable time-sequence data storage and analytics, which our transaction systems are not designed to handle, and to avoid data-intensive queries against our business transaction systems.

Q1.d. What were the development challenges?

Our biggest challenge was establishing and sustaining data integrity in the source systems. These source systems frequently contained data that was unimportant for the day-to-day business operations, and thus was often not updated. However, for the data warehouse, this information was critical. “Cleaning” the source systems was a critical upfront effort.
Another major challenge was deciding which of several departments would be the first beneficiary of the data warehouse. After much discussion, we built a consensus for Risk (Credit), since this department’s capabilities would also benefit Sales and Finance.

**Q1.e. How large was the development team? Did you use any contractors/consultants?**

At its height, the development team was 20 people, including a core of 8 employees at our Connecticut HQ and in Dallas, and contractors and consultants (primarily freelancers) in various US and Canada locations. In-house work included project management, design and high-level development; contractors and consultants were focused on routine development, QA and testing.

**Q2. How does GE Real Estate measure risk?**

Risk is measured as the likelihood that a loan will be profitable, under current conditions and potential alternate scenarios (“sensitivity analysis.”) Our tracking of Risk begins at loan approval but continues through the life of the loan, as we use the data warehouse to monitor ongoing risks and opportunities (for example, is an office building’s major tenant considering moving out? Or is that tenant growing and likely to need more space vs struggling and likely to surrender space?)

**Q3. What reports and analyses are used to help manage risk? Is it possible to get a screen shot?**

There are dozens of reports. The most widely used is Portfolio Review, which looks at our holdings in a given market (for example, office buildings in downtown Chicago, or retail shopping centers in Orange County, CA). Portfolio Review highlights trends in occupancy and rental rates, both within the properties and within their overall markets. Another widely used report is Tenant Reporting, which uses publicly available information on large tenants within our properties to identify potential risks/opportunities. There is also a broad ad hoc analytic capability, which is used by our Risk team when analyzing individual loan proposals.
Q4. Who are the users of the decision support capabilities and how often and how do they use it?

Primary users are Risk, Sales and Property Management. Each uses it dozens of times per day. Risk uses it to help assess profitability of a proposed loan, as does Sales (For Sales, the issue is which proposed loans have the greatest likelihood of being approved. The sales people earn much of their living on commission, and need to focus their time on loan proposals that have the highest likelihood of being approved). Property Management uses the application to identify opportunities and risks on existing loans.

Secondary users include Finance (for profitability forecasting) and Marketing (to identify market opportunities).

Q5. How much data is in the current warehouse? How many tables? Fields?

Tables - 1,308, Columns - 22,826, Size - 63GB allocated/43GB currently used, expanding by 5-7 GB annually

Q6. How large is the team that manages the current application? What are their roles?

Today, as a mature system, the team includes two full time employees – one project manager and one designer/developer. There are also several employees whose roles span multiple systems, and work on each, including the data warehouse, as needed. And, we still have 6 contractors.
Q7. What was your role in the project? How much of your attention is spent monitoring the ongoing operation and use of the system?

As CIO, I worked with the business leaders to identify start-up development priorities, and, along with our CTO who reports to me, set the development strategy. I am still involved through participation in the IT-User Steering Committee which meets quarterly to prioritize new development, and through routine development reviews and application performance reviews with the IT team. Today, my involvement is less than 2 hours/week, a fraction of what it was during the major development efforts.

Q8. What vendors did you work with? What is the architecture of the system?

We built in-house, without an integrator, using the following tools: Oracle database, Infomatica for ETL, ASP and ASP.Net for front end, and Cognos for reports. The design includes raw tables from the source systems (which are the business transaction systems), an ODS (Operational Data Store) to normalize the data, and a Star schema, which takes data from the hierarchical DBs and stores it on a time-key basis.

Q9. What have the business benefits been for the project? What has been the approximate cost? ROI?

The major business benefit has been better and quicker decision making. Investment to date, both direct (salaries, software, servers) and indirect (data center charges) has been $7mm, and is running at $1.1mm per year. Direct cost savings (reduced or avoided costs of manual research and analysis) have been over $10mm to date and are running at a calculated $3mm per year. The intangible benefits are by definition more elusive, but are informally estimated by our Finance department at more than triple the direct benefits: The intangibles include the ability to respond faster and more decisively to business opportunities, improved risk and property management, and a better command of market issues.

Testimonials

"Before the data warehouse, it could take a week or more to perform analyses and get answers. Now, not only do we get answers right away, but the response time is incredible."
-- Jayne Day, Chief Risk Officer

"Our team uses the data warehouse to better understand market trends and opportunities. Its comprehensive, easy to use, and always there when we need it."
-- Greg Bates, Managing Director, North America Equity/MultiFamily
About GE Real Estate

GE Real Estate, a business unit of GE Commercial Finance, is a leading source of innovative real estate capital solutions. In 2005, GE Real Estate achieved double-digit earnings growth, with net income increasing 14% over 2004. GE Real Estate is one of the fastest growing units within GE Commercial Finance. Serving global real estate markets for over 30 years and led by President and CEO Michael Pralle, GE Real Estate is organized into five, customer-focused operating units. North America Lending: Structures all forms of debt financing for multi-tenant commercial properties in the U.S. and Canada. It also provides properties in the $5 million to $500 million range for niche real estate markets, including: affordable housing, manufactured housing, hospitality, golf course and vacation properties. Business Property: Provides single-tenant mortgages and owner-occupied real estate financing for small and mid-sized U.S. and Canadian businesses with $1 million to $1 billion or more in annual revenues. North America Equity: Establishes partnerships and joint ventures with established real estate owners, and pursues single property and portfolio acquisitions. Europe: Delivers equity and debt financing to customers and joint venture partners in Europe, including direct equity investments, joint-venture equity partnerships, corporate outsourcing, sale-leasebacks and debt financing. Asia Pacific: Serves customers and partners in Japan, Korea, Australia, New Zealand, India and China, providing equity and debt financing for all asset classes, including: office residential, hospitality and development projects. For more information visit [GERealEstate.com](http://www.GERealEstate.com).

About Hank Zupnick

Before becoming CIO at GE Real Estate, Mr. Zupnick held IT leadership positions at other GE financial businesses in the United States and Europe. A recognized leader in the global applications of information technology, Hank also worked in senior positions with Citigroup and, previously, at Bankers Trust Company. He received both his MBA and BA degrees from the University of Pennsylvania.
About the Author

Daniel J. Power is Professor of Information Systems at the University of Northern Iowa and he is the Editor of DSSResources.COM.

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Hank Zupnick provided permission to use the screen shots at DSSResources.COM on December 05, 2006. GE Real Estate staff has reviewed this case for accuracy. The author wants to thank Hank Zupnick for his help with this case. This case study was posted at DSSResources.COM on Friday, January 12, 2006.
UNIVERSITY OF LONDON

DIPLOMA AND BSc IN COMPUTING AND RELATED SUBJECTS
FOR INTERNATIONAL PROGRAMMES STUDENTS

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In the online encyclopaedia Wikipedia you will find a definition of the term “Metadatabase” and a short explanation of its origin.

You are required to explain this concept and its application to Executive Information Systems by researching scholarly articles available on the Internet.

Discuss the strengths and weaknesses of Metadatabase Technology and mention at least one vendor that supplies such technology.

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