CHALLENGE

To send graduates into the workplace with the analytic skills and experience that businesses seek in their new hires.

SOLUTION

The University of Connecticut deploys JMP software and a full suite of SAS® tools in the School of Business GE-sponsored edgelab and in a variety of classes leading to an advanced business certificate in business analytics. JMP will be used extensively in a new Master of Science program in business analytics and project management.

RESULTS

Students in the School of Business understand the importance of business analytics, use the same tools businesses employ to examine critical data and create immediate value for the businesses who hire them.

www.jmp.com

www.business.uconn.edu

University of Connecticut

Equipping Business Students with Competencies Valued by Today's Organizations

JMP® statistical software helps the University of Connecticut School of Business prepare its students for a business world where a fundamental knowledge of analytics is essential

The University of Connecticut School of Business considers a fundamental understanding of business analytics to be critical to success for young professionals entering today's business world.

Businesses today are gathering massive amounts of digital data from customers, business processes and other internal sources, and recognize a compelling need for the skills required to manage and mine that data for actionable business intelligence – a key to business productivity and growth.

Ram Gopal is among those who are preparing business students for this new imperative. Gopal is the GE Capital Endowed Professor of Business and Department Head of Operations and Information Management in the University of Connecticut School of Business, where he specializes in business analytics.

"We've been offering both undergraduate and graduate analytics classes for a number of years," Gopal says. "We used to do fairly straightforward projects like Web site analysis and studies of IT investments and infrastructure.

"But over time, business needs have changed. We realized a few years ago that a lot of business issues are really buried deep in the data, and by harnessing that data we can come up with really innovative solutions to business problems. In addition, with the emergence of e-business and e-supply chains, today's business world has moved into a data rich environment. The goal is to transform data into actionable business intelligence."

Gopal says that through its association with GE, the school has been receiving increasingly more requests for analytics assistance from different GE businesses.

"At the same time," says Gopal, "there's been more and more interest from recruiters who hire our students in having these students graduate with a broad range of business analytics skills. We invite very high-level folks – CIOs, senior VPs, IT directors – to talk to our students about careers in information technology and the skills they need to succeed in those careers.

"We've observed that business analytics is always at the top of the list of skills they want from new hires."

> "I'm amazed at the level of sophistication of different techniques that can be executed with JMP. I think it's superb."
>
> **Ram Gopal**
> GE Capital Endowed Professor of Business and Department Head of Operations and Information Management, University of Connecticut School of Business

Attacking real-world challenges

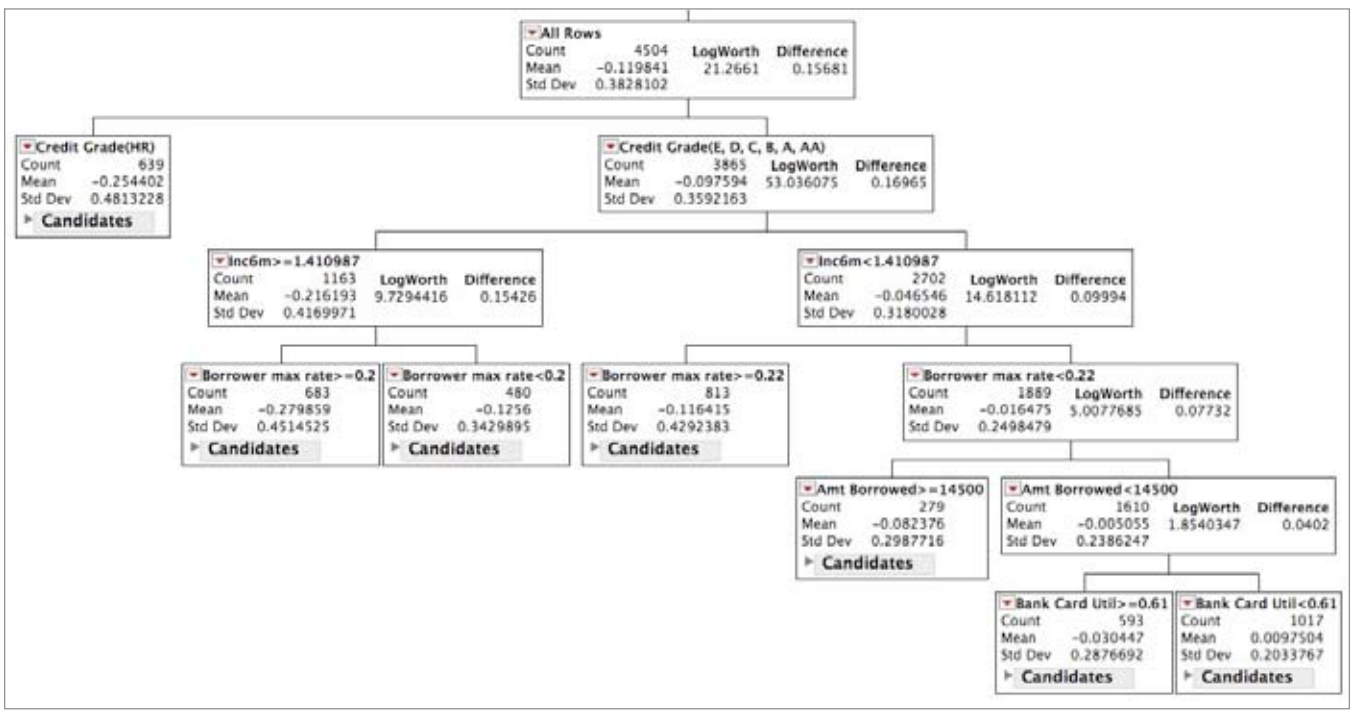
In response, the university's School of Business, which takes seriously its mission to deliver a pipeline of talented and energized professionals, developed a structured set of business analytics offerings.

One place they started was at the GE UConn edgelab, first-rate research facilities where UConn business students collaborate with faculty and GE managers to generate team-based, innovative solutions to some of the complex business challenges GE faces. Edgelab strives to "challenge assumptions and infuse fresh ideas."

"The business analytics component really gained a lot of traction in our edgelab," Gopal says. "And then what really helped was our partnership with SAS. Most of the projects in edgelab are executed using SAS tools, now including JMP."

Among projects conducted at edgelab in 2009 were:

- **Stroke monitoring**. JMP was used to run analyses on results from a concept test survey of neurologists and ICU and emergency room directors.
- **Small-form factor x-ray**. JMP was used to determine attribute preferences and price sensitivities from a survey of radiologists.
- **Backhaul brokering**. SAS was used to identify and match shipping lanes from trailer sensor data.
- **Risk-based collections**. JMP was used to run principal components analysis to determine historical and forecasted macro factors influencing account delinquencies.
- **Turbine data insights**. SAS was used extensively to run statistical analysis on turbine sensor data.
- **Contract risk-adjusted pricing**. JMP was used in cluster analysis, and SAS for principal components analysis, of macro-economic variables to forecast shop visits for GE Aviation engines.



Using the JMP Partition platform, researchers discovered investments that would potentially offer the greatest ROI and lowest risk.

Sophisticated tools make the grade

Gopal says that while many business students understand the value of data and the importance of business analytics, they have difficulties in its actual execution.

"Students used to struggle with things like regressions and decision trees because there were no really good, accessible tools available," Gopal says. "They were required to have a fairly sophisticated knowledge of programming – and that's what turned off the students.

"JMP has changed that dramatically. I think JMP is a tool that's really amenable to business students – and I saw that right off the bat."

Gopal has begun to make more extensive use of JMP in his own research. One such project is online peer-to-peer lending.

"Peer-to-peer lending allows people to get loans that they wouldn't typically get from standard financial institutions," Gopal says, "and it's an opportunity to potentially improve your credit rating. But what isn't yet understood very well is the extent of the risks."

In this research, Gopal and his colleagues took the perspective of a lender and examined what types of investments might best suit the peer-to-peer marketplace. Using JMP, they performed a decision-tree analysis and then backed it up with statistical analysis.

"We uncovered several very interesting phenomena. The metric that traditional lending institutions rely on most is credit rating. If you have an A+, you're considered a very safe investment. But we found this isn't necessarily true in this marketplace."

In fact, what they learned after digging deeper into the data was that the most profitable investments frequently are ones in which the credit rating of the borrower is low. For those, the returns more than make up for the risks.

"What this tells us is that credit rating alone isn't a good metric in understanding good investment options," Gopal says.

"I found JMP's decision trees to be very sophisticated. They worked fabulously and the students really understood what was happening.

"I know some of my colleagues have in the past tried to do this type of analysis, and they had to do an extensive amount of coding. JMP means we don't have to do that anymore.

"I'm amazed at the level of sophistication of different techniques that can be executed with JMP. I think it's superb."

The Business of Music

Another area of expertise for Gopal is the economics of digital music.

"The fundamental issue with digital goods is that after the product is created, there's almost zero cost to reproduce it," Gopal says, "which is different from almost any other type of product. This creates a potential piracy problem.

"One of the challenges in studying piracy issues is that it's very hard to observe what's going on – the illegal activity isn't easily observable – and that creates a whole set of challenges in terms of the right legal and business actions to take."

Gopal and his colleagues began working with a music-exchange site called Kazaa. For three years, they monitored 2,000 users on an hourly basis to determine, among other things, when they were online, how often they shared music and what genres they shared.

"While we were collecting the data," says Gopal, "the Recording Association of America, the legal arm of the music industry, filed a few lawsuits. This gave us a great opportunity to analyze very detailed data about user behaviors and how those behaviors were affected by the threat of lawsuits."

Gopal and his colleagues published a number of research papers on their findings, one of which can be found at http://www.journals.uchicago.edu/doi/abs/10.1086/501085.

New initiatives

The School of Business now uses JMP and SAS in most courses that involve statistics and business intelligence. Courses making extensive use of the tools include Predictive Modeling (which examines, among other things, clustering analysis, decision trees, Bayesian classification, linear regressions and mining patterns); Data Mining and Business Intelligence; and a PhD course in advanced research methods and data analytics.

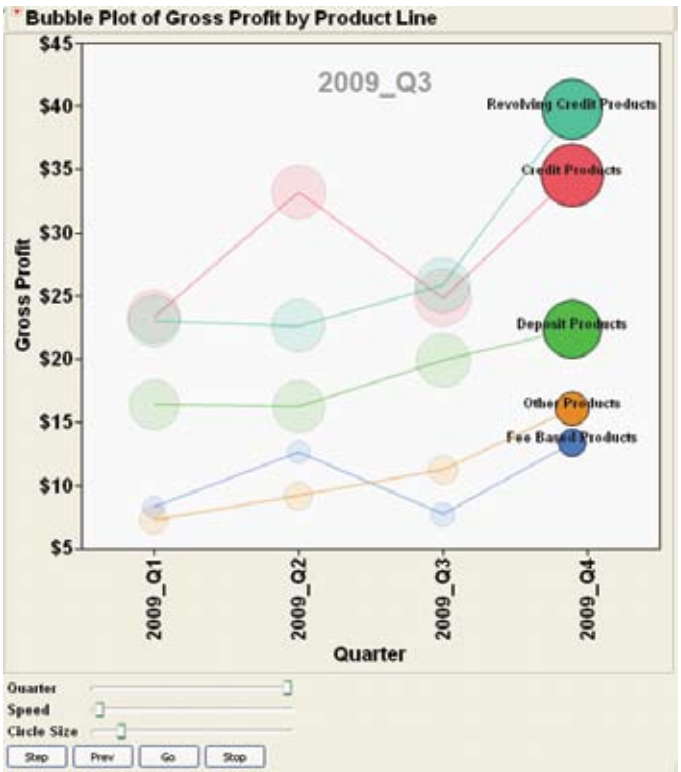
"We also have two new initiatives that will significantly enhance the use of JMP and SAS in our curriculum at the graduate level," Gopal says.

The first is an advanced business certificate in business analytics. The program was created for business managers and information professionals who are interested in the role of business analytics in organizations and how data analytics can be applied to help make better business decisions. This certificate program comprises four courses, all of which will use JMP and SAS extensively.

The second is a new Master of Science degree in business analytics and project management. The program will provide an integrated curriculum that blends theory with contemporary practice and a global perspective, using evolving technologies.

"My personal feeling is that JMP is a great jumping-off point for business students to get introduced to the world of business analytics. The tight integration between JMP and SAS will enable students to delve deeper and explore opportunities in text mining and other useful aspects of SAS.

"Another promising area with JMP is in visualization. I think for business students that's a must-have, and I'm really looking forward to incorporating more business visualization with JMP into my courses."



Interactive graphics are ideal for business data exploration and can be saved as Adobe Flash files and shared with non-JMP users.

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To contact your local JMP office, please visit: **www.jmp.com**