To create lasting impact in the digital age, business research must emphasize the roles technology, data, and analytics play in launching new products, encouraging innovation, and managing people and processes. That’s what sets apart research at the School of Business at Stevens. Here, our faculty are exploring concepts like digital innovation, crowdsourcing, and social media to see how they can be difference-makers in industry. This report is a brief showcase of faculty accomplishments over the last two academic years. It includes the publications of our faculty that have appeared, or have been accepted, in the FT50 journals, as well as a selection of grants received and conferences organized during this period. We invite you to review it to get a better sense of the unique perspective Stevens researchers bring to solving problems.

Sincerely,

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ABOUT STEVENS AND THE SCHOOL OF BUSINESS

Founded in 1870 in Hoboken, New Jersey, Stevens Institute of Technology has a long history of research and education that emphasizes creativity, critical thinking, and problem solving, preparing students to become entrepreneurial-minded, transformational leaders. The School of Business is accredited by AACSB and is valued in academia and industry for relevant academic programs and cutting-edge research into how data and technology can solve complex business problems. Stevens is nationally recognized for return on investment; its alumni are recognized for making critical contributions and introducing new innovations in industries of every category.
RESEARCH QUESTION:
Are there ways to channel the drive and optimism of highly overconfident CEOs while curbing the extremes of risk-taking and over-investing tendencies?

FINDINGS AND POTENTIAL IMPACT:
We use the Sarbanes-Oxley Act 2002 to analyze the impact of improved governance in moderating the behavior of overconfident CEOs. We investigate whether appropriate restraints on CEO discretion and the introduction of diverse viewpoints in the boardroom serve to moderate the actions of overconfident CEOs and create benefit to shareholders. Our results contribute to two important areas of financial economics literature: managerial overconfidence and market regulation.

FT50 Publications

RESEARCH QUESTION:
How does capability stretching affect new product success?

FINDINGS AND POTENTIAL IMPACT:
Capability stretching can be challenging, as it involves the acquisition of new knowledge. A longitudinal study of product introductions in the workstation industry shows capability stretching negatively affects new product survival. Furthermore, this negative relationship is more pronounced in vertically integrated firms, but less so in more diversified firms. But capability stretching also can be rewarding — it renews organizational capabilities and facilitates adaptation to technological change. This research suggests product innovation plays important roles in challenging organizations to renew and stretch their technological capabilities.

FT50 Publications
ELAINE HENRY  
Associate Professor of Accounting

RESEARCH QUESTION:
International financial reporting standards (IFRS) afford greater flexibility than U.S. accounting standards in calculating operating cash flow (OCR). What does this flexibility mean?

FINDINGS AND POTENTIAL IMPACT:
Studying IFRS-reporting firms in European countries, we document variation in firms’ cash-flow classification choices and provide evidence on determinants of OCF-enhancing classification choices. Because of greater flexibility, IFRS-reporting firms’ OCF exceeds what would be reported under GAAP. In analyzing the consequences of reporting flexibility, we find evidence that market pricing is affected by these classifications choices.

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FT50 Publications


NAN HU  
Associate Professor of Accounting

RESEARCH QUESTION:
How do online shoppers understand and interpret product reviews?

FINDINGS AND POTENTIAL IMPACT:
Online product reviews tend to be positively skewed with a J-shaped distribution — many five-star ratings, a smaller number of one-star ratings, and little in between — which may reflect positivity and under-reporting biases. The voluntary nature of online reviews results in the presence of these two biases, which distort the ability of online product reviews to truthfully signal quality. We also found online retailers adjust pricing in response to bad reviews, to attract new customers at lower price points and improve reviews.

FT50 Publications
RESEARCH QUESTION:
How can we measure the vulnerability of a business to fake reviews?

FINDINGS AND POTENTIAL IMPACT:
Previous work has established the importance of the review-based rankings of platforms like Yelp and TripAdvisor, which offer increased visibility to highly ranked businesses. By assuming the perspective of a malicious business owner, we can reverse-engineer a platform’s ranking function, compute the minimum number of fake reviews required to surpass a given competitor in the review-based ranking, and operationalize the vulnerability of review-based reputation to fraud. We find 10 to 15 fake reviews are sufficient to complete an attack against most targets, and suggest effective defense strategies against fake reviews.

FT50 Publications

RESEARCH QUESTION:
How do open source software (OSS) communities coordinate interdependencies across code and developers, despite the lack of formal coordination mechanisms?

FINDINGS AND POTENTIAL IMPACT:
OSS developers used various forms of emergent, routinized patterns to address interdependencies across code and developers. First, a pattern called “direct implementation,” associated with variation in activities, was used to address interdependencies in code. Second, a pattern called “knowledge integration,” associated with variation in the ordering of activities, was used to address interdependencies across developers. This implies different types of routinized patterns should be used to address different interdependencies.

FT50 Publications
VICTOR XI LUO
Assistant Professor of Finance

RESEARCH QUESTION:
To what extent can demand-side shocks explain asset pricing moments?

FINDINGS AND POTENTIAL IMPACT:
We propose a simple theory of asset pricing in which demand shocks — arising from stochastic changes in representative agents’ rate of time preference — play a central role in price determination. These shocks give rise to valuation risk that allows the model to account for key asset pricing moments, such as the equity premium, the bond term premium, and the weak correlation between stock returns and economic fundamentals.

FT50 Publications

GARY LYNN
Professor of Marketing

RESEARCH QUESTION:
Under what circumstances does team autonomy contribute to innovation-team success, and what mechanisms underlie these relationships?

FINDINGS AND POTENTIAL IMPACT:
In a study of 212 corporate product development teams, we found the relationship between team autonomy and success is an inverse “U” shape for technologically turbulent environments and “U”-shaped for technologically stable environments. In rapidly changing environments, increased autonomy generally produces better performance. However, both directed and autonomous teams are effective in technologically stable environments. Given autonomous teams can be disruptive and costly to an organization, managers must consider the degree of change or uncertainty before implementing a one-size-fits-all autonomy approach.

FT50 Publications
ADRIANA MADZHAROV
Assistant Professor
of Marketing

RESEARCH QUESTION:
Can ambient scents emitted in the store environment lead consumers to purchase more luxury goods and spend more money?

FINDINGS AND POTENTIAL IMPACT:
Across three experiments and two field studies in retail stores, the authors demonstrate that in a warm-scented (i.e., cinnamon) vs. cool-scented (i.e., peppermint) environment, people choose more luxury goods and spend more money. Warm scents lead people to experience greater social density and, as a result, a greater need for power, which ultimately manifests in increased purchases of luxury brands.

FT50 Publications

FENG MAI
Assistant Professor
of Information Systems

RESEARCH QUESTION:
What is the field of consumer research about?

FINDINGS AND POTENTIAL IMPACT:
We use topic modeling to analyze trends in research topics, impactful papers and top contributing scholars, highlighting the decline in family decision-making research and the flourishing of social identity and influence research. We predict topics such as goal and self-control may continue to rise in coming years. Though rare, conceptual articles and articles that introduce methodological innovations provide great value to the scholarly community.

FT50 Publications
RESEARCH QUESTION: In the face of a crisis, are local firms more benevolent than foreign firms?

FINDINGS AND POTENTIAL IMPACT:
My investigation of a national disaster in India found that not only did foreign firms make relatively larger philanthropic contributions, foreign firms’ escalated philanthropic commitment lasted for a longer period after the disaster than that of local firms. This finding changes our understanding of social ties. It suggests that in order to create a stronger local connection, foreign firms outdo local firms. As a result, foreign firms are more valuable partners in efforts to rebuild affected communities.

FT50 Publications

MURAD
MITHANI
Assistant Professor of Management

RESEARCH QUESTION: How can collectives of individuals and machines perform creative tasks?

FINDINGS AND POTENTIAL IMPACT:
In an online open design community focused on 3D printing, the introduction of a tool by the platform owners increased knowledge reuse. This tool allowed novices to change the parameters of a design. Experts defined what the parameters were, and novices generated designs by changing parameters. As a result, novices found a simple way to engage with the community, allowing designs to proliferate. Open design communities encourage the exploration of a design space at the same time they codify knowledge for others to build upon.

FT50 Publications

JEFF NICKERSON
Professor of Information Systems
RESEARCH QUESTION:
What role does competition play in how social media about firms impacts their performance?

FINDINGS AND POTENTIAL IMPACT:
Strategic decisions must take competition into account. When it comes to the impact of social media, the role of competition is not yet fully understood. In one paper, set in the context of cable news, we find significant evidence for the impact of posts about competitors. This impact is positive or negative, depending on the context and the nature of the competition. In another paper, set in the context of hotel reviews, we find incorporating competition in the visibility of hotels online helps to understand their vulnerability to attacks from fake reviews.

FT50 Publications

RESEARCH QUESTION:
Are securities priced locally or globally?

FINDINGS AND POTENTIAL IMPACT:
We propose a new multifactor model for international stock returns that includes size, value and momentum factor portfolios, built in a partial-segmentation capital market framework. Accounting for externalities driven by incomplete access to stocks and markets, our model not only captures strong common variation in international stock returns, but achieves low pricing errors and rejection rates relative to pure local and pure global models. This partial-segmentation approach is evaluated using monthly returns for more than 37,000 stocks from 46 developed and emerging market countries over two decades and for a wide variety of test assets.

FT50 Publications
The School of Business hosts a number of conferences each year that offer academics and industry professionals alike the opportunity to better understand how Stevens research is creating meaningful impact in industry.

Conference on High-Frequency Finance and Analytics
This multiday event, among the first of its kind when it launched in 2009, shares the latest research and model applications for financial data sampled with high frequency. The conference puts special emphasis on the areas of mathematical finance, financial engineering, quantitative finance, stochastic processes and applications, and more. Past conference topics have included:
- Mathematical, statistical and computer science models for high-frequency data.
- Multiscale modeling of financial events.
- Trading rules and strategies using high-frequency data.
- Regulatory aspects of financial markets.
- Systemic risk.

Hundreds of scholars, researchers and business professionals visit the Stevens campus each year to attend this unique conference. The conference has created additional opportunities for Stevens to disseminate finance-related research. Dr. George Calhoun helped launch a Springer/Apress series on quantitative finance, with several books in financial engineering, risk management and algorithmic trading published. And Dr. Ionut Florescu is leading a new journal, High Frequency, in collaboration with Wiley, which will share insights made possible through data sampled at high frequency.

FinCyberSec
The Financial Cybersecurity Project is a research initiative aimed at better understanding the defense of financial markets against new and evolving cyber threats. Stevens’ expertise in technology management, finance, accounting, business and computer science creates opportunities for researchers across disciplines to share insights in this area. At FinCyberSec’s two annual conferences, issues such as information sharing, risk assessment and cybersecurity data analytics are discussed by leaders in this space.

Emerging Trends in Entrepreneurial Finance
Entrepreneurial finance is a major economic driver behind businesses, such as Uber and Facebook, that are reshaping what industry looks like in a digital economy. The two-day Emerging Trends in Entrepreneurial Finance event launched in 2017, with more than 100 attendees gaining greater insights into the changing role of venture capital in the face of technology-driven disruptions, angel activity in supporting new ventures and how the availability of new financing sources is changing business startup activity.

Stevens Alliance for Innovation and Leadership
In addition to a regular series of roundtables, SAIL hosts an annual conference offering a deep dive into an area of particular need in industry. The day-long event includes talks by a mix of thought leaders in academia and industry, as well as a panel discussion. Past topics have included digital innovation, high-velocity organizations and social data analytics as a driver of innovation.
Researchers at the School of Business have been highly successful in securing grants to support research that creates new and exciting possibilities to reshape the way we work and live. Grants have provided support to researchers working in areas such as health care management, computational finance and diversity in STEM education. These are some of the grants faculty have secured in the last two years.

“Foundations: Integrating Evidence-based Teaching and Learning into the Core Engineering Curriculum”  
National Science Foundation, 2015  
PI: Keith Shippard, Co-PIs: Patricia Holahan, Frank Fisher, Susan Metz, Arthur Camins  
To improve student outcomes, universities must consider systemic changes as they incorporate valuable STEM courses into curricula. This grant is helping researchers test practices at Stevens, including the development of models for evidence-based teaching approaches, that can be applied to other universities.

“Probabilistic and Statistical Analysis of Complex Stochastic Networks”  
U.S. Army, 2016  
PI: Chihoon Lee  
There are vast varieties of “candidate” approximating models for complex stochastic processing networks — queueing systems, production lines, service networks, and so on. The choice of network model can have an enormous impact on performance. Research funded by this grant aims to determine the best models for fitting observed data and how to estimate sets of key network parameters.

“CyberCorps: Scholarship for Service”  
National Science Foundation, 2016  
PI: Thomas Lechler*, Co-PIs: Antonio R. Nicolosi, Koduvayur Subbalakshmi  
This grant provides scholarship money to help universities better prepare top-tier cybersecurity professionals for leadership positions in government, where they are charged with the defense of the nation’s critical cyber infrastructure. At Stevens, project management, entrepreneurial thinking and leadership development round out these critical skills.

“Computational-Qualitative Research”  
Swedish Center for Digital Innovation, 2016  
PI: Aron Lindberg  
This grant enabled a series of research seminars that provided participants with the tools and insights needed to navigate the emerging landscape of digital trace data and computational tools. Scholars from New York University, University of Southern California and other institutions participated.

“Understanding and Improving Implicit Coordination in Peer Production Networks”  
National Science Foundation, 2017  
PI: Jeff Nickerson, Co-PI: Deborah Gordon  
What can humans learn from the ways ants collaborate in order to accomplish goals? Based on how ants collaborate, researchers hope to better understand how groups coordinate in creating complex artifacts like Wikipedia, and build even more complex ones going forward.

“A Research Coordination Network to Converge Research on the Socio-Technological Landscape of Work in the Age of Increased Automation”  
National Science Foundation, 2017  
PI: Kevin Crowston, Co-PIs: Ingrid Erickson, Jeff Nickerson  
This grant will help researchers create a network of people in academia and industry to shape conversations around the future of technology in the workplace, focusing on how jobs can be augmented, not replaced, by tech-driven innovations.

“Consortium for Corporate Entrepreneurship”  
Consortium for Corporate Entrepreneurship, 2017  
PI: Peter Koen  
The Consortium for Corporate Entrepreneurship (CCE) supports research into the application of lean startup methods at large companies and the preferred network for engineers and scientists associated with innovative breakthroughs. Annual funding through sponsors P&G, WL Gore, ExxonMobil and Goodyear supports a Ph.D. student to make additional contributions to the CCE’s mission.

“Enhancing Lives: Improving the Quality of Service and Reducing Costs for Medicaid Patients in Safety Net Clinics and Hospitals”  
Nicholson Foundation, 2017  
PI: Tai Ben-Zvi  
Traditionally, safety-net hospitals have few resources to devote to innovation that might improve health outcomes of Medicaid patients, as these organizations are challenged to improve services to patients at lower costs. This grant is supporting a study of innovative opportunities help safety-net hospitals meet these goals.

“Innovative Methods of Computational Finance”  
CME Group Foundation, 2017  
PI: Ionut Florescu  
Among the avenues of research supported by this grant is SHIFT, a realistic financial market microstructure test bed. SHIFT is a notable platform with order matching engines, database engines and broker engines that can realistically simulate the behavior of high-frequency financial markets. Researchers hope SHIFT will become a key tool for improving market functionality through the testing of scenarios and strategies under realistic conditions prior to live market deployment.

*At time of proposal, Susanne Wetzel was PI, Thomas Lechler was co-PI.
UNDERGRADUATE STUDENT RESEARCH

Each Stevens student works on a yearlong capstone project to apply what they’ve learned in business, either on a startup venture, a consulting assignment for a partner company or a research project with faculty. Research projects allow students to do master’s-level work in advancing thought leadership in analytics, data and technology.

Bitcoin volatility: This team explored potential reasons for Bitcoin’s volatility and considerations for pricing derivatives on assets with a large skew and kurtosis. Advisor: Dr. Stefano Bonini

Intraday commodity data: This project created an analytical tool to make use of a complex data source from CME, allowing future generations of researchers to develop new insights into the futures market. Advisor: Dr. Eleni Gousgounis

Monkey vs. analysts: This project assessed the efficacy of random investing on an exchange-traded fund and the design of “smarter monkeys” that could make informed decisions with random investment still at the core. Advisor: Dr. Harriet Ghodskou

GRADUATE STUDENT RESEARCH

Master’s students have opportunities to do meaningful research through the Field Consulting Program, which puts them to work researching a topic for a partner company and recommending strategies to move a business concept forward.

Pershing: Students researched the role of robo-advisors in replacing humans as investment professionals, based on the level of services required and portfolio size. Advisor: Dr. Murad Mithani

Nokia: Students conducted research into software-defined networks to determine the impact of these networks on telecom companies in an increasingly software-driven industry. Advisors: Dr. David Belanger, Dr. Peter Koen

Wiley: Students researched markets, created personas, ran competitive analyses, and built site mapping and content plans in building industry-specific microsites to drive textbook sales. Advisor: Michael Parfett

PH.D. PROGRAMS

Ph.D. students enjoy close access to faculty researchers, who mentor them as they move through the highly competitive program. By the time they graduate, students have made important research contributions and are positioned to accept offers at business schools worldwide.

Ph.D. in Business Administration
Harris Kyriakou ’16 Ph.D.
Assistant Professor, IESE Business School, University of Navarra, Spain
Dr. Kyriakou’s thesis examines 35,727 product designs submitted to the largest 3D printing online community. Reuse for customization is identified as a force behind the rapid growth of artifacts, while novel designs were shown to lead to more reuse. These results provide ways of understanding reuse, and suggest ways of catalyzing creativity.

Ph.D. in Financial Engineering
Anqi Liu ’17
Lecturer in Financial Mathematics, School of Mathematics, Cardiff University, U.K.
Dr. Liu’s dissertation explores information propagation in financial markets based on sentiment transition in investor communities, market price/investor sentiment shocks transmission, and information flow in equity markets. It aims to quantify the relationship between irrational behaviors and market efficiency.