

Penn State Smeal College of Business
Center for Supply Chain Research®

2022 - 2023

Center for Supply Chain Research Impact Report



PennState
Smeal College of Business

Center for
Supply Chain Research®

smeal.psu.edu/cscr



From the CSCR Executive Director

Time certainly passes swiftly when you're enjoying yourself. I find it hard to believe that I've been serving as the Executive Director of the Center for Supply Chain Research® (CSCR®) for a decade now. And yet, every day – whether in person or virtually at times – I still feel the same excitement when I step into the office and confront the challenges that academia presents.

Our community of practice remains as vibrant as ever, and our partners, faculty, and students share my enthusiasm for the endless possibilities that the future of supply chain management holds for us. As we approach the end of 2023, we look back on the past year with a sense of pride and cautious optimism for what next year may bring.

This year has finally been a return to some semblance of normalcy in the post-Covid-19 era. We've also welcomed new sponsors, faculty members, and a whole new

administration at the university. Of course, we continue to see fresh faces of eager students joining us to learn the intricacies of supply chain management. Yet much also remains constant.

Next year will be the 35th anniversary of the founding of the original Center for the Study of Business Logistics which we renamed in 2000. I say that all with pride knowing that organizationally we'll be around for many years to come. God willing and the creek don't rise, as my uncle would say.

Looking back on the most recent year, we saw some old milestones surpassed and new goals set for the future as we rolled out the latest iteration of our strategic plan. Those are carefully detailed in this report.

However successful it was, 2023 brought its share of sadness as well, with the passing of our founder, Dr. John Coyle, who was not only a dear friend but also

a mentor to me personally. His absence will be deeply felt and remembered by many of us.

"Our community of practice remains as vibrant as ever, and our partners, faculty, and students share my enthusiasm for the endless possibilities that the future of supply chain management holds for us."

The supply chain community is as resilient and resourceful as ever and reflected in the CSCR family. As 2023 closes and 2024 becomes imminent, we want to thank all of you, our sponsors, partners, faculty, students, and staff for your undying support and encouragement.



Steve Tracey,
CSCR Executive Director

A handwritten signature in black ink that reads "STEVE TRACEY". The signature is stylized with a long horizontal stroke at the end.

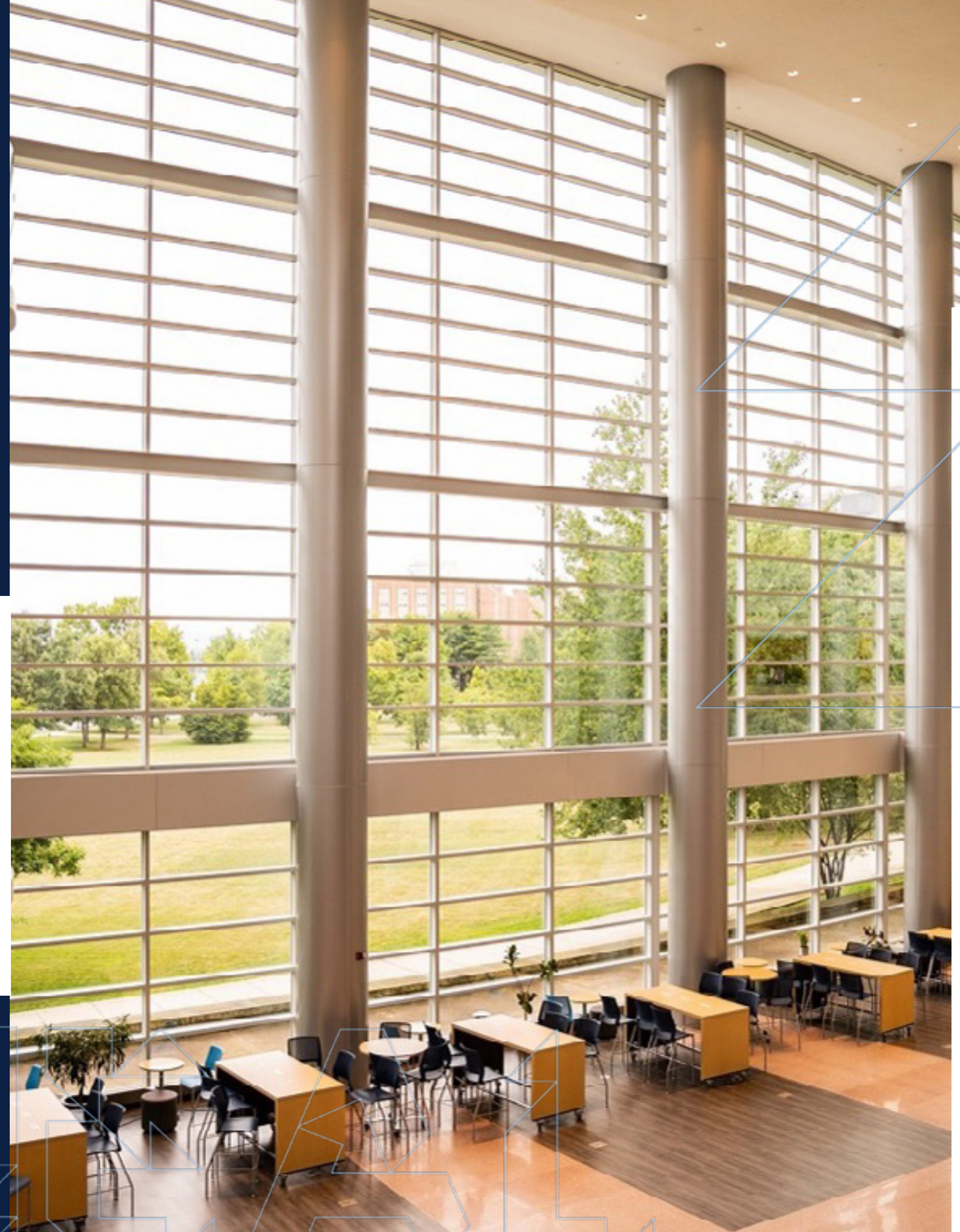


About CSCR



The Penn State Center for Supply Chain Research (CSCR)

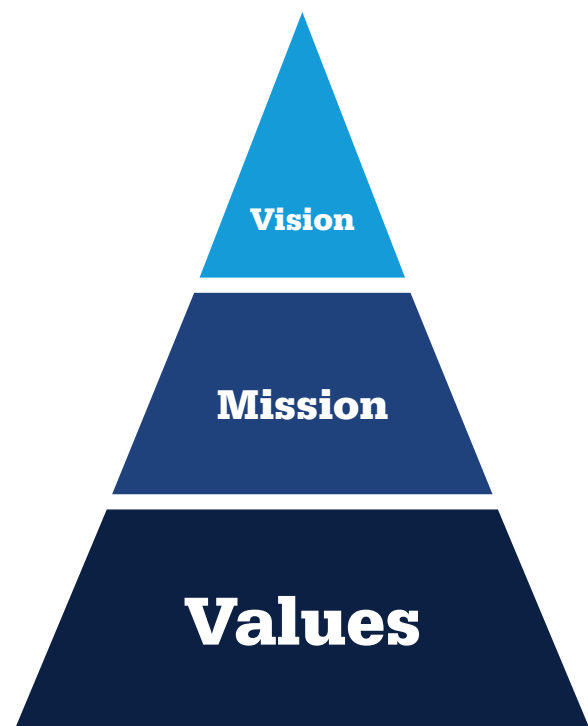
is a dynamic and influential hub of expertise and innovation in the supply chain management landscape. Situated within one of the nation's leading research universities, CSCR is driven by a deep commitment to advancing the field of supply chain management through rigorous research, industry partnerships, and the development of future supply chain leaders. With a rich history of collaboration between academia and industry, we pride ourselves on being at the forefront of cutting-edge research, thought leadership, and practical solutions that address the evolving challenges of global supply chain networks. Our dedicated team of researchers, faculty, staff, and students, along with our industry sponsors, form a vibrant community that is continuously pushing the boundaries of knowledge and practice, making the Center for Supply Chain Research a recognized leader and catalyst for excellence in the field.



Mission and Vision

For over three decades, the Center for Supply Chain Research (CSCR) has built a community of researchers and leading organizations in both the private and public sectors. Our mission is to serve as a leader in supply chain education and research while making meaningful impacts by providing a distinguished center of excellence; bridging higher education with industry; building the pillars of supply chain research, innovation, and world-class knowledge; and fostering a mutually beneficial relationship between students, alumni, partners, and faculty. Our vision is to shape smarter supply chains as a beacon of excellence and give organizations the thought leadership, skills, knowledge, and connections that deliver meaningful impact for life. We are committed to fostering collaboration among academia, industry, and the broader community, as we work tirelessly to advance the knowledge and capabilities of supply chain professionals.

Shaping Smarter Supply Chains for a Better World



To serve as a leader in education, thought leadership and research:

- **Connecting** students, alumni, industry, and faculty
- **Creating** a community of supply chain thought leadership
- **Linking** supply chain research with industry challenges
- **Building** Communities of Practice to solve real world challenges

Values:

- Humility
- Thought Leadership
- Lifetime Learning and Partnership
- Inclusive Diversity
- Evolving Expertise

By the Numbers: Academic Year 2022–23

40+

Industry partners, averaging greater than 12 years of sponsorship

913

Supply chain professionals educated through 24 Supply Chain Leadership Academy Sprints

1,095

Students and 159 companies interacted during 5 days of career fairs held in both spring and fall semesters

42

New faculty and student research works, expanding the 300+ works on the CSCR Research Portal

113

Students participating in 48 projects engaging with 35 companies





2022–25 Strategic Plan at a Glance



The Penn State Center for Supply Chain Research (CSCR)

is thrilled to provide a snapshot of our five-year strategic plan, which charts a dynamic course for our organization as we continue to lead the way in shaping the future of supply chain management. At CSCR, we are not just a research center; we are an integrated community of practice. Our unique ecosystem brings together the diverse talents and perspectives of the Penn State community, dedicated industry sponsors, driven students and faculty, and visionary CSCR leadership. This cohesive collaboration ensures that our strategic initiatives are rooted in academic rigor, industry relevance, and real-world impact.



SMEAI

Data-Driven Planning

When developing the CSCR Strategic Plan, our planning process is firmly rooted in data, specifically from CSCR corporate sponsors. In a survey completed in 2022, our sponsor base provided valuable feedback which is summarized in the following key points:

- Our sponsor representatives are mainly ‘mid-career’ professionals who are primarily interested in engaging in their space with peers.
- Our sponsors are open to networking in both problem-solving and social settings and are primarily interested in engaging to receive rather than engaging to share.
- Our sponsors want to network with manufacturers, technology providers, and retailers to learn about technology and benchmarking topics.
- Our sponsors find the knowledge most important to them is available from only a few sources, including CSCR, and their preferred way to engage is through webinars.
- Career fairs and employer information sessions are prized, while websites and research are not as widely utilized as they could be.

The survey data collected were used to inform the direction of the CSCR Strategic Pillars, the unique offerings we provide our members, and the setting of goals for future growth.



Strategic Pillars

Knowledge Transfer

Delivering Industry Leading Solutions

1. Access to the leading supply chain programs in the nation
2. Thought leadership
3. Continuing education
4. Learning labs

Fiscal Viability

Building Fiscal Sustainability

1. Expand our ability to continually operate with positive cash flow
2. Secure new revenue
3. Protect our value
4. Expand the breadth of our member engagement

Talent and Diversity

Expanding Talent and Diversity

1. Continuously improve our student quality
2. Encourage diversity of thought
3. Rigorously and respectfully challenge status
4. Expand diversity

Connectivity

Connecting Academic and Industry Networks

1. Grow our community of sponsors
2. Expand links to higher learning
3. Develop our personal networks and knowledge base
4. Leverage our Advisory Board



Partnering for Impact



SMALL

Talent

Expansive Talent Pool: The Synergy of Career Fairs, Industry Partnerships, and Experiential Learning



In the ever-evolving landscape of higher education and professional development, students are continually seeking ways to enhance their employability and secure a successful future. Three of the most advantageous avenues for achieving this aim are through participation in career fairs and networking events, as well as the securing of internships and cooperative education (co-ops) jobs. These opportunities not only pave the way for a smoother transition from academia to the professional world, but also empower students with skills, knowledge, and networks that are pivotal for long-term success.

The Penn State Supply Chain & Information Systems (SCIS) Career Fair, hosted by the Center for Supply Chain Research (CSCR) and the Supply Chain & Information Systems Department, stands as a testament to the enduring value of such initiatives as it celebrates its 22nd year of connecting students and employers through over 40 biannual events thus far.

While career fairs have long served as a bridge between academia and industry, the SCIS Career Fair is specifically designed to encourage students to engage with supply chain job opportunities and discover companies they might not have previously considered. The fair also allows students to practice their networking skills, learn to communicate their strengths effectively, and gain insights into the expectations and demands of the professional world.

“This fall, the Supply Chain & Information System Career Fair finally felt like we are almost back to normal pre-pandemic energy,” said Tracie Shannon, CSCR Administrative Director.

“The atrium was buzzing with recruiters and students. It was great to see lines forming from our students attending and really engaging in their conversations.”

Connecting with Employers: The Smeal Advantage

College years are a pivotal period for establishing connections with potential employers. Penn State Smeal College of Business students are primed for success and coached to initiate these connections early on. In doing so, students tap into a wealth of knowledge, resources, and mentorship that can be transformative for their careers.

Ahead of the SCIS Career Fair, CSCR hosts corporate information sessions for undergraduate, MBA, and graduate students interested in employment, internships, and co-op opportunities in supply chain management. The sessions are exclusively open to CSCR corporate sponsor companies, and the private sessions provide students with a deeper understanding of company culture and open positions.

Establishing a rapport with employers provides our students with competitive edge in a competitive job market—as those who have already engaged with industry professionals possess a greater understanding of what employers are seeking in potential candidates. Our students are prepped for success through video resources, resume workshops, and career fair preparation they receive from their faculty advisors.



“Our team had an incredible time engaging with top-notch candidates at Penn State’s Supply Chain and Information Systems Career Fair. From insightful conversations to impressive resumes, we were blown away by the caliber of talent we encountered,” said Justin Lily, Lead University Recruiter at Verizon, on LinkedIn.

“With a pool of promising individuals, we can’t wait to welcome new additions to our thriving organization. Our participation in this event has set the stage for a prosperous future filled with endless opportunities and growth!”



Fostering Long-Term Partnerships

Internships and co-ops can be integral components of a well-rounded educational experience. These immersive opportunities bridge the gap between theoretical knowledge gained in classrooms and the practical application of that knowledge in real-world scenarios. Through internships and co-ops, our students gain firsthand experience in the field of supply chain management, developing skills that are often hard to replicate in a classroom setting. These opportunities also allow Smeal students to build professional networks, which often lead to securing job offers upon the conclusion of their internships or co-ops.

Corporate sponsors get an early look at emerging talent, allowing them to shape their workforce strategies and hire the best-suited candidates; and students gain a clearer picture of potential employers, which informs their choices for internships, co-op programs, and full-time positions. These enduring partnerships contribute to a seamless transition from college to the professional world and foster a thriving ecosystem of learning and innovation, as evidenced by Lindenmuth's experience.

"Smeal has provided me with endless opportunities and life-long connections that I cannot imagine getting at any other university. I



"These events provided the opportunity to have open discussions with many different companies, so that I could gain a better understanding of the real-world opportunities and challenges that companies were facing," said Lindenmuth. "Collectively, these experiences were extremely valuable in helping me prepare for internship and full-time job interviews."

One such success story is found in Jack Lindenmuth, who graduated with a bachelor's degree in supply chain and information systems in May 2023 and joined Wegmans Food Markets as a Logistics Specialist in Rochester, New York. Of all the career development opportunities provided by Smeal, Lindenmuth cites the SCIS Career Fairs as the most impactful.

However, the partnership between academia and industry—exemplified by corporate sponsor participation—goes well beyond individual events. It lays the foundation for long-term collaborations that benefit both parties.

received such a well-rounded education and know that I am well prepared to make an immediate impact at my employer, Wegmans Food Markets," notes Lindenmuth.

In an era marked by rapid technological advancements and changing job landscapes, the Penn State SCIS Career Fair exemplifies the long-lasting impact of fostering connections between students and employers. The fairs' remarkable 20+ years of longevity underscore its value as a conduit for Penn State Smeal students to explore their career options, showcase their talents, and secure meaningful engagements with potential employers.

Building Blocks of the Supply Chain Curriculum

Many people ask about how the supply chain and information systems curricula are designed. Without the specific details of each course, at a fundamental level, it is structured as follows.

1. Foundational Business Courses: These courses provide students with a strong foundation in business concepts, including accounting, economics, finance, marketing, and management.

2. Core Supply Chain Courses: These are the required courses that focus on the tenets of end-to-end supply chain management and cover topics, among other important aspects of a supply chain, such as the following:

- o Supply chain strategy and design
- o Operations management
- o Logistics and transportation
- o Inventory management
- o Procurement and supplier management
- o Supply chain analytics and technology
- o Sustainability in supply chains
- o Ethics and corporate social responsibility

3. Electives: Students also can choose from a range of elective courses to tailor their education to their specific interests and career goals. Elective topics could include international supply chains, supply chain risk management, and supply chain optimization.

4. Technology and Tools: Supply chain management often involves the use of specialized software and technology tools. Students may learn how to use tools such as enterprise resource planning (ERP) systems, supply chain management software, and data analytics tools.

5. Case Studies and Projects: Many of our courses offer real-world case studies and projects to give students hands-on experience in solving supply chain problems and making decisions. At a higher level, we also have experiential learning programs that offer in-depth experiences working on real problems with real firms.

6. Internships and Co-op Programs: We have numerous partnerships with companies and offer the opportunity for internships or co-op programs that allow students to gain practical experience in supply chain management during their studentship.

7. Professional Development: Our supply chain program also offers opportunities for students to engage with industry professionals, attend conferences, and join professional organizations like the Association for Supply Chain Management (ASCM), the Council of Supply Chain Management Professionals (CSCMP), the Institute for Supply Management (ISM), and others.

8. Capstone Course: In their fourth year, students are required to complete a capstone course that demonstrates their ability to apply their knowledge and skills to solve complex supply chain problems.

Student Success

Utilizing Resources

Making the jump from student to full-time employee can be challenging, but for Harvey Howarth, SCIS '22, the transition was made easier thanks to several Smeal resources. Howarth currently works for VWR, part of Avantor, as a Supplier Operations Specialist. His responsibilities include maintaining the quality logistical performance of their 10,000+ vendors/suppliers throughout their North American Network and inventory management projects. After making a connection with Avantor through the SCIS Virtual Career Fair, he completed an operations internship which led to full-time employment.

“The ability to collaborate with others effectively cannot be understated. Every Penn State course I took had a focus on working with others around you, and even if there was a person who didn’t pull their weight, it taught great lessons in knowing how to work with different people and how to get the most of each other to achieve a common goal.”



Achieving Excellence

Not many people can say they are part of a formal AWESOME network, but Emma Scott can. The SCIS senior earned a place among the 2023 cohort of AWESOME Excellence in Education Scholarship recipients. Scott received a \$5,000 scholarship, joining a network of AWESOME Scholars made up of former award recipients. The scholarship program was created in 2013 to provide women enrolled in a full-time supply chain degree program with the opportunity to attend the AWESOME Symposium and the CSCMP EDGE Conference. Since that inaugural year, five women have been selected each year until 2021 when the program was expanded to include 20 recipients and a financial award.



“It would be an understatement to say I look up to the women in this organization greatly. What means the most to me regarding this scholarship is that these women I have so much respect for saw potential in me, and for that, I am eternally grateful. I am so honored and humbled that Penn State nominated me, and equally so to be selected as one of the recipients.”

Taking Risks

Taking a co-op during their second year is not on many students’ minds. However, for Hannah Sauerwein, End-to-End Integration Lead at Johnson & Johnson (J&J) within their Pharmaceutical Company, Janssen, it paid off. Her co-op led to a full-time role which started off quickly but not without its challenges. After graduation, Sauerwein entered J&J’s rotational program where she emersed herself in one arm of the organization for nine months before moving on to another.



“It ultimately got easier as you got into the rhythm of team culture, expectations, and goals of the group and has actually made it much easier for me to transition from role to role now, post leadership development program. Also, I think having had a co-op at Johnson & Johnson really enabled me to feel like I could jump right in and provide my insights, opinions, and ideas because I knew that culture was respected and desired within the company.”

Getting Involved

Ashley Zheng, SCIS senior, knows the value of student engagement. She is the Director of Networking and Recruiting for the Supply Chain Management Association and Vice President for Sigma Chi Mu Tau, a national supply chain honors society. While joining multiple student organizations may seem intimidating to some, Zheng cites that peer interaction has been the most inspiring part of being a supply chain student at Smeal. During the summer of 2023, Zheng joined Boeing’s Philadelphia office as a program management intern and plans to graduate in the fall of 2023.

“My favorite part of being a supply chain student at Smeal is the various avenues available to expand your knowledge and grow professionally as a student. From student organizations to career fairs, the college has created a productive environment for their students to thrive.”



Placement by SCIS and MIS Major

Supply Chain Management



\$68,515

Average Full-Time Salary

\$5,324

Average Signing Bonus

64%

Received a bonus

Management Information Systems



\$69,138

Average Full-Time Salary

\$6,150

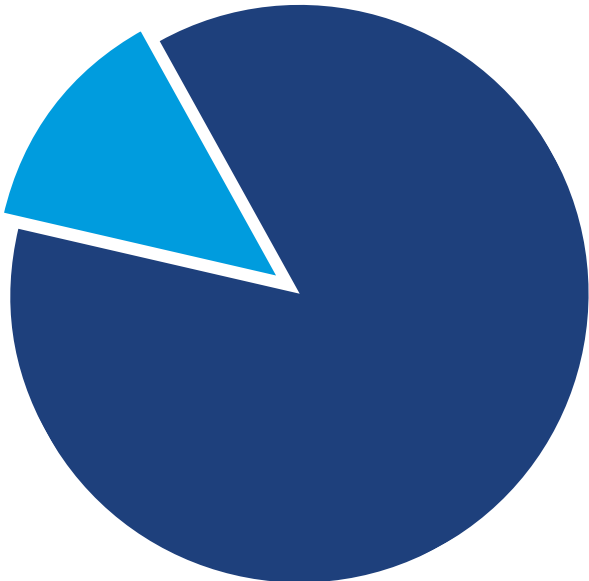
Average Signing Bonus

69%

Received a bonus

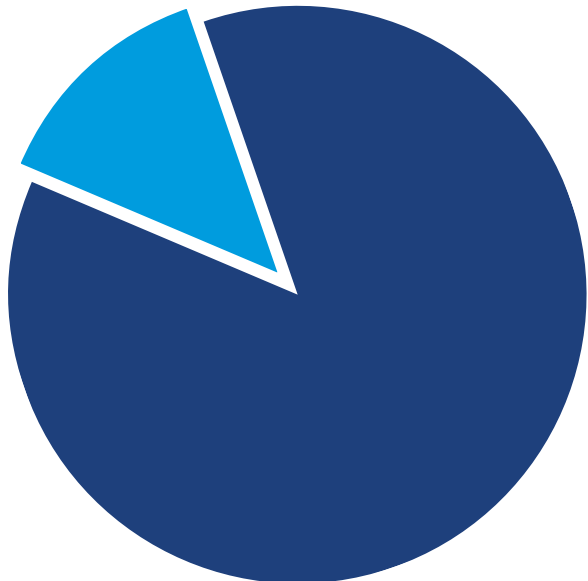
Student Outcomes within 3 Months of Graduation

Overall Outcomes Statistics: All Business Majors



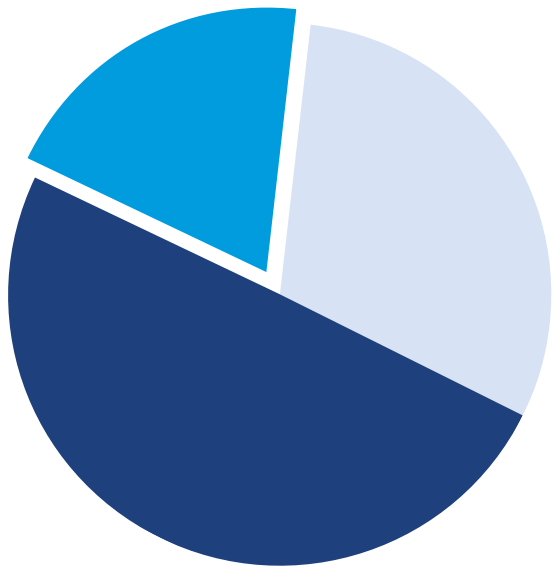
89.1%

of students placed within three months of graduation



86.7%

of students with an internship who were paid



80.3%

of students reporting 1 or more internships/co-op. Of these students, **49.9%** reported 2+ internships/co-ops



\$68,800
Average full-time salary



\$20.64
Average internship/co-op pay per hour



\$5,598
Average signing bonus
57.4%
Received a Bonus



\$5,149
Average relocation bonus
23.7%
Received a Bonus

Students Outcomes within 3 Months of Graduation	
	Total
Full-Time Employment	66.7%
Further Education/Fellowship	17.8%
Entrepreneurship	1.2%
Post-graduate Internship	1.6%
Public Service	<1%
Military	<1%
Other/Gap Year	<1%
Still Seeking	10.9%

International v Domestic Outcomes within 3 Months of graduation		
Employment	18.8%	75.5%
Continuing Education	63%	10.1%
Entrepreneurship	2.5%	<1%
Post-graduate Internship	2.5%	1.5%
Public Service	0%	<1%
Military	1%	<1%
Still Seeking	11.7%	10.9%

Data was collected through an optional student survey distributed prior to Summer 2021, Fall 2021, and Spring 2022 commencements. We received 1,114 of 1,619 graduating student responses prior to graduation. Within three months of graduation, 231 new records and/or updates to original respondent destinations were added utilizing feedback from LinkedIn for a total knowledge rate of 83%.

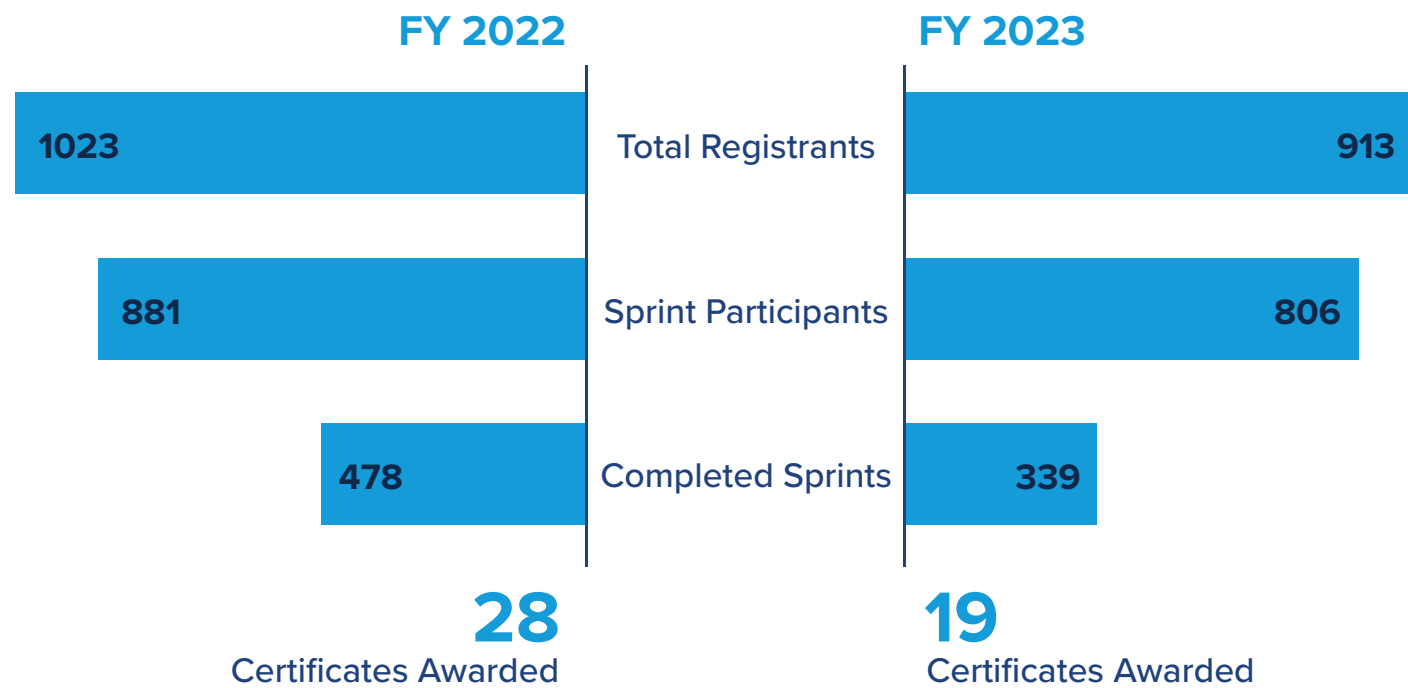
Knowledge

Supply Chain Leadership Academy

The Center for Supply Chain Research is pleased to continue to offer the Virtual Supply Chain Leadership Academy Sprint in partnership with CorpU, a UdeMy Company. Offered exclusively to our corporate sponsors, these executive education benefits are available bimonthly in a flexible, virtual format.

During the 2022 academic year, CSCR offered a series of new Supply Chain Leadership Academy certificate opportunities. The certificate series is made up of three individual sprints that are stacked together based on topic. Sponsors can earn an applicable certificate at the completion of the series. CSCR offered four series that featured content ranging from total cost of ownership approaches, to logistics and supply chain resiliency, and to future possibilities for procurement. The certificate series is a benefit offered exclusively to our corporate sponsors, in addition to four pre-paid seats for each sprint session.

Supply Chain Leadership Academy Participation FY 2022 and FY 2023



Case Study:

Leveraging CSCR's Sponsorship Portfolio

In spring 2023, corporate sponsors Johnson & Johnson (J&J) and IBM collaborated to create a session for the CSCR Advisory Board Webinar Series called, "Unlock Corporate Sponsorship Incremental Value." The session highlighted both IBM and J&J's approach to leveraging CSCR's sponsorship portfolio. Below is IBM's learning solutions and takeaways.

IBM, a 32-year sponsor of CSCR, grounds its partnership with Penn State in a multi-pronged team of IBM members with varying responsibilities. Shannon Beecher, Services Supply Chain Vice President, and Tony Horton, Supply Chain Operations Vice President and IBM Neurodiversity Executive Sponsor, head up the team as executive sponsors. The remainder of the IBM X Penn State team is made up of Brenda Berg, Supply Chain Projects Leader CSCMP, and Dan Thomas, Business Optimization Manager, who both focus largely on their university pillars of talent, skills, research, and growth.

CSCR's sponsorship portfolio is split into four main areas: research engagement, knowledge, networking, and talent. Throughout its session, IBM shared its take on the value add of programs offered by CSCR and presented the custom learning program it has built with the center.

IBM has maximized its executive education sponsor benefits by creating a custom learning solution made available to its employees. The goal of this initiative is to develop employee skills, effectively elevating their value to IBM Supply Chain and the company's global leadership position in the industry.

IBM leveraged the Supply Chain Leadership Academy experience to create a custom five-week learning program. The first half of the program is a three-week series that is self-paced, cohort-based learning and ends each week with a live virtual session featuring Penn State faculty, a CorpU facilitator, and an IBM subject matter expert. The second half of the program is a two-week sprint series that focuses on the IBM application with a live virtual sprint insights review, idea review, and a team assignment. The program culminates with an executive showcase where participants can demonstrate their learnings.

By applying skills that they have learned during the program, IBMers have the opportunity to generate ideas for improvement through innovation, thought leadership, intelligent workflow, while further developing their growth mindset.

CSCR's custom learning solutions are intentionally formatted with flexibility in length, location, and delivery. A variety of learning designs are used to ensure that each program is dynamic and that concepts are translated to actionable solutions, as evidenced by IBM's experience.

"Fantastic opportunity to learn valuable skills, get creative professionally, and collaborate with colleagues across the organization." – IBM employee on their experiences in the Custom IBM and Penn State Learning Program

Supply Chain Thought Leaders:

Penn State Supply Chain Podcast

The Penn State Supply Chain Podcast, sponsored by the Center for Supply Chain Research (CSCR) at Penn State Smeal College of Business, shares a regular discussion of contemporary topics in supply chain management with Penn State faculty, expert practitioners, and CSCR sponsor organizations.

Steve Tracey, professor of practice and executive director for the Center Supply Chain Research, and Irv Grossman, Senior Vice President of NTT Data Supply Chain Consulting, bring our listeners a discussion of happenings at CSCR, current research topics, hot takes on supply chain topics in the news, and insights from leaders in the supply chain industry.

In 2022–23, the Penn State Supply Chain Podcast brought together 10 experts who shared insights on topics ranging from shifting changes in talent management to achieving sustainability through stakeholder collaboration and 3D printing to supply chain technology advances. A total of 10 episodes were produced, generating a total of 1,784 downloads and an average of 178 downloads per episode.

The podcast has currently generated over 4,000 all-time downloads, showing a 104 percent increase from last year's all-time downloads.

4,000

All-time downloads from listeners across the United States and a host of other nations

27

Total experts interviewed about the latest trends in the supply chain industry

Top 3 Most Downloaded Episodes: Season 2

Episode 20

Emerging Technologies: Revolutionizing your Supply Chain

Episode 19

The Pending Recession: Predictions and Expectations for 2023

Episode 16

Supply Chain AI, ML, and Analytics

Season 2 Episodes

Episode 12

Achieving Sustainability through Stakeholder Collaboration

Niki King, Head of Sustainability at Unilever, North America

Episode 13

Creating an Agile Culture

Galen Smith, Digital Supply Chain Transformation Leader at IBM

Episode 14

Additive Manufacturing

Tim Simpson, the Paul Morrow Professor in Engineering Design and Manufacturing at Penn State

Episode 15

Robotics Automation

Jeff Cashman, a Senior Executive Leader in Technology and Leadership

Episode 16

Supply Chain AI, ML, and Analytics

Chris Caplice, Executive Director of MIT's Center for Transportation & Logistics (CTL)

Episode 17

The Role of Company Culture in Recruitment

Charlie Saffro, President and Founder of CS Recruiting

Episode 18

Exploring Neurodiversity

Natalia Lyckowski, Global Neurodiversity Advancement Leader and Supply Chain Inventory Transformation Lead at IBM

Episode 19

The Pending Recession: Predictions and Expectations for 2023

Charles Whiteman, the John and Karen Arnold Dean of the Smeal College of Business

Episode 20

Emerging Technologies: Revolutionizing your Supply Chain

Anthony Roath, assistant professor of supply chain management in the Harbert College of Business at Auburn University

Episode 21

Meet the CSCR Co-Research Directors

Brent Moritz and Hui Zhao, Co-Research Directors for CSCR and professors in the Supply Chain and Information Systems Department at the Penn State Smeal College of Business



Charles Whiteman, John and Karen Arnold Dean

Research

From Experience to Expertise: CSCR Sponsored Student Research Projects

One mark of competitive job candidates is their level of preparedness for the field they are entering. The Center for Supply Chain Research (CSCR) offers a strategic opportunity to prepare students for professional settings after graduation through structured student research projects. Students who participate in research engagement projects have the chance to work directly with the center's corporate sponsors to tackle real-world challenges and conduct relevant research. In spring 2023, the center updated its processes regarding student research projects for improved flow and increased efficiencies throughout the process.



As part of the new process, Brent Moritz and Hui Zhao, Co-Research Directors of CSCR, vet all submitted projects for their potential impact on supply chain knowledge and the technical feasibility for them to be completed within an academic semester or academic year. While this co-assignment process is new, the type of research engagement the center offers remains in the following focuses.

Best-in-Class Practices

This type of project employs the methodology that focuses on research already publicly available, and students will synthesize the existing literature on the subject area. An example might be what other companies are doing with corporate social responsibility practices.

Company Specific – Data Intensive

This type of research project focuses on a specific problem experienced by a company and requires the company to provide data to students for analysis. An example of this type of project might be an analysis to determine optimal shipping policies to a firm's customers.

Company Specific – Process Intensive

This type of project focuses on a specific problem experienced by a company that is process, not data, specific. An example might be an analysis of how to eliminate congestion on the receiving dock of a distribution center.

Company Specific – Data and Process Intensive

This type of project requires an in-depth analysis by students since it incorporates both data and process aspects. An example might be redesigning the picking area of a distribution center based on order profiles and shipping schedules.

Current Topics

These projects cover all the remaining types of projects. Generally, these types of projects can involve publicly accessible data or publicly available knowledge on best practices.

PhD Candidate Projects

Supply Chain PhD students

Schreyer Thesis

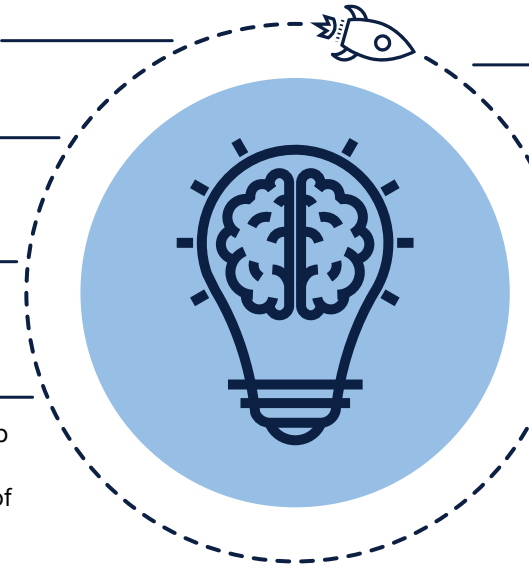
Supply Chain
Schreyer students

Honor Option

Non-honors class for
Schreyer students

APEX/NLCG

Nittany Lion Consulting Group
students, second-year MBA
students or undergraduates of
Smeal's Sapphire Leadership
Academic Program



SCM 496

A semester-long independent
study project for top supply
chain 3rd and 4th years

Learning Factory

A collaborative project
involving engineers and
supply chain students

High School Project

State College High
School's Supply Chain
Program students

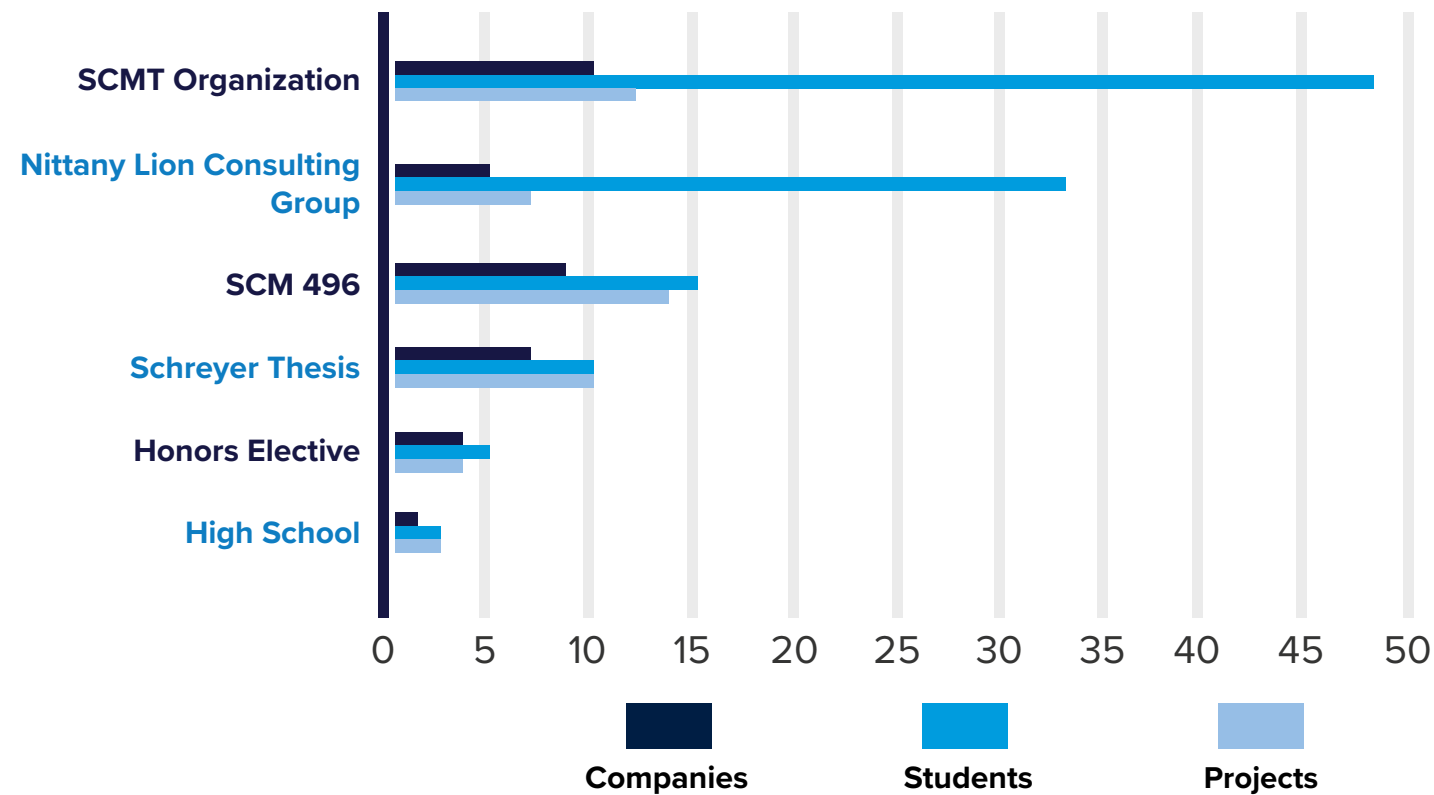
Student Research Engagement

The integration of academic teachings and practical application helps prepare students to solve industry problems they will encounter once out of the classroom. Student research engagement builds a bridge between theoretical academic analysis and real business cases that don't have a standard solution. While industry competencies and desired skills may change over time, it is academic preparedness that flexes to meet these ever-changing needs.

"One of the center's missions is to bridge higher learning with industry and a second one is to provide world-class knowledge. Our student research portfolio perfectly fits into these two goals," said Steve Tracey, Executive Director of CSCR. "Besides the experience itself, the other thing we bring to the table is incredible scale. We facilitate more student-industry research projects in SCIS than anywhere else in the college, year after year. We can only do so because we have an amazingly robust and engaged sponsor base who recognizes the value in engaging with students through research."

CSCR's novel research engagement model moves beyond passive learning styles to better prepare students for employment, provide corporate sponsors with high-quality deliverables, and increase prepared talent pools for the industry at large.

113 Students Participating in 48 Research Projects, Engaging with 35 Companies



Sponsored Research Engagement

Starting in 2021, the CSCR embarked on another innovative path in research by asking our sponsors to submit research ideas that could be pursued by our PhD candidates as an integral part of their dissertation and publications portfolio necessary to receive their doctoral degrees. So far, there have been a handful of incredibly interesting submissions and two of those are in process with a third under consideration.

In addition, CSCR has a long history of fostering collaborations between our sponsors and the world-renowned supply chain faculty in the Penn State Smeal College of Business. Brief abstracts of in-progress PhD research and faculty engagement projects follow.

The Cost of Supply Chain Complexity, in Collaboration with IBM

“What is the cost of supply chain complexity?” This project, in collaboration with IBM and involving our first-year PhD candidate Ms. Daniella Ruiz-Moreno, is advised by Dr. Dan Guide, Dr. Saurabh Bansal, and Professor Steve Tracey. In reference to the extended SCOR model (including after-market service offerings), the research study looks at how a highly customized product portfolio and ones with a higher level of standardization and fewer products compare in terms of complexity and cost.

Results so far have yielded some insights that IBM can use to craft their offering and supply chain strategies, and a first-year paper for Ms. Ruiz-Moreno.

The Hidden Cost of MRO Failures, in Collaboration with Ivaldi and SDI

This in-process project in collaboration with the firms Ivaldi and SDI, which is advised by Dr. Dan Guide, Dr. Saurabh Bansal, Dr. Sergey Naumov, and Professor Steve Tracey, looks at where additive manufacturing can potentially contribute to extending the useful life of capital assets and reduce both the costs and carbon footprint of repair parts.

Last year, a survey study was conducted and the results so far have been both interesting and encouraging. In this initial phase, the survey findings have resulted in a paper published in collaboration with the center and our own Dr. Kusumal Ruamsook titled, “The Hidden Cost of MRO Failures: Industry Survey Sheds Light on Reasons for Early Retirement of Capital Asset.” Results show that studied firms are undergoing the challenges of early asset retirement, with almost half of their major assets being retired before the end of useful life. And MRO failures play an important role in this predicament. The lack of availability of spare parts, excessive lead times for spare parts, expensive cost of spare parts, and unavailability of skilled maintenance personnel are all factors contributing to the firms’ retiring their assets earlier than desired.

Empowering Solutions: Additional Research Examples

<p>Catching the Blockchain Wave for Procurement Applications <i>Tracey, Ruamsook and Ines</i> <i>CSCMP's Supply Chain Quarterly</i></p>	<p>Cultivating Relentless Supply Chain Agility: From Concept to Reality at IBM <i>Tracey, Ruamsook and Smith</i> <i>Supply Chain Management Review</i></p>	<p>Mapping the Supply Chain of Neodymium <i>Cyrus, Rovera, and Tong</i> <i>Student Research Project, in collaboration with the Penn State Applied Research Lab</i></p>
<p>Product Complexity Impact on Cost Model <i>Ruiz Moreno</i> <i>PhD Student Research Project, in collaboration with IBM</i></p>	<p>The Carrot isn't Attached to the Stick: The Misalignment between Firms' Sustainability Practices and the Rating Indices that Reward Them <i>Sophia Schuster</i> <i>Master's Student Research Project</i></p>	

Engaging with Industry

Staying engaged with the business community is among the focuses of CSCR to promote both knowledge dissemination and contemporary relevance to supply chain professionals. Last year, CSCR made four speaking appearances at renowned industry conferences, including NASPO, Parcel Forum, the State of Tennessee Local Government Purchasing Forum, and the Central Pennsylvania International Business Conference. CSCR also participated in the DISCOVER (Diversity & Inclusion in Supply Chain) Summit and two corporate sponsorship recognitions, as well as hosted the Novack Transportation Symposium and guest speaker Natalia Lyckowski for Smeal's Executive Insights.

CSCR Research Portal

The Center for Supply Chain Research (CSCR) is one of the nation's leading institutions dedicated to research and education in the field of supply chain management. With over 30 affiliated faculty members from the Department of Supply Chain and Information Systems (SCIS) at Smeal College of Business, we have access to one of the largest and most prestigious academic concentrations of supply chain management research in the United States.



Prolific research engagement with business and industry is fundamental to our mission to be a leader in supply chain knowledge creation and dissemination.

We offer the CSCR Research Portal as a public venue to share the latest research from our affiliated faculty and to provide a repository of their research interests and expertise. Through this portal, which was launched in November 2020, we welcome supply chain professionals to explore our faculty research, discover shared interests, and connect with our faculty to tap into their expertise and discuss potential research collaborations.

From the website's inception, the CSCR Research Portal has seen a 58 percent growth rate of the number of posts over three years. This past year, 42 new faculty and student research works were posted, expanding the body of knowledge resources to over 300 works on the CSCR Research Portal. Our Research Portal welcomed more than 700 visitors last year.



Did You Know? Faculty Consultations

CSCR corporate sponsors enjoy several benefits as part of their membership to the center. One of those benefits includes management support, and as part of that support we offer faculty research consultations. As a member company, you have access to faculty affiliates for consultations on company-specific supply chain issues and topics.

Networking

Networking is a cornerstone of success in the dynamic world of supply chain management, offering a multitude of advantages to professionals in the field. Whether through in-person gatherings or virtual events, building a robust network can be a transformative experience. By connecting with peers, experts, and thought leaders, supply chain professionals gain access to a wealth of knowledge, fresh insights, and collaborative opportunities that can propel their careers to new heights.



The Center for Supply Chain Research (CSCR) plays a pivotal role in fostering these opportunities, creating a vibrant ecosystem where professionals can exchange best practices, establish collaborative partnerships, and develop relationships that are instrumental in achieving excellence in supply chain management. CSCR offers networking opportunities available to the broader supply chain community such as the Supply Chain Leaders' Forum as well as exclusive sponsor offerings like the CSCR Advisory Board Webinar Series.

The biannual Supply Chain Leaders' Forum is a beacon of innovation and excellence in the realm of supply chain management. With its rich history of fostering collaboration, driving thought leadership, and addressing the most pressing challenges in supply chain management, the Supply Chain Leaders' Forum has become an indispensable platform for shaping the future of global supply chains. This past year, we hosted both fall and spring forums which addressed business challenges our sponsor organizations are facing and interested in learning more about, namely circular supply chains and emerging technologies.

Exploring Growth in the Circular Economy

Customers all over the world increasingly recognize the challenges caused by our “take-make-dispose” approach to both production and consumption. But a better alternative, the circular economy, has evolved. This development redefines the economy around the principles of designing out waste and keeping products and materials in use for as long as possible.

On October 12, 2022, the Center for Supply Chain Research hosted the Fall 2022 Supply Chain Leaders’ Forum, Growth in the Circular Economy. The forum explored how organizations were piloting new business models, making their products more durable and easier to reuse/recycle while remaining profitable. With five sessions led by eight supply chain experts, participants learned how companies were transitioning their supply chains by using technology and innovative solutions to ensure our world’s limited resources are put to good use.

Emerging Technologies in Supply Chain

As supply chains continue to grow longer and more complex, it is imperative to take advantage of emerging technologies to remain competitive. For decades, the biggest objective for supply chain management was to cut costs. However, new technologies have significantly transformed today’s supply chains, allowing companies to expand their goals to include such factors as customer satisfaction, sustainability, and risk mitigation.

On February 22, 2023, the Center for Supply Chain Research hosted the spring 2023 Supply Chain Leaders’ Forum, Emerging Technologies in Supply Chain. The forum explored some of the most popular tech tools shifting the industry and demonstrated how they can make a difference in conducting operations successfully within a company. Featuring five leading experts from various companies, the forum fostered dialogue around leveraging drone delivery and AI; mitigating supply chain risk through social media; discovering emerging IoT in rail; augmenting the supply chain experience with emerging technologies; and advancing sustainability through blockchain-based supply chains.

Special Topic Webinars

In 2022, the Center for Supply Chain Research added a digital program to its portfolio to foster networking opportunities and facilitate peer-to-peer interactions. The CSCR Advisory Board Webinar Series are board-directed virtual events that aim to address special topics that are timely, relevant, and of interest to our community. These sessions explored topics ranging from additive manufacturing to diversity in talent management and data sonification to maximizing sponsor benefits.

“Impressive panel of leading industry experts (CEO, VP level) . . . Refreshing to gain diverse external perspectives on a supply chain topic with such broad impact.” – Johnson & Johnson employee on their experience attending the Gaining Supply Chain Resiliency through Additive Manufacturing session.

CSCR Advisory Board Webinar Series

+ Gaining Supply Chain Resiliency through Additive Manufacturing

+ Expanding Talent and Diversity

+ Data Sonification – A New Approach to Supply Chain Analytics

+ Unlock Corporate Sponsorship Incremental Value

Networking Snapshot

10

learning and engagement sessions on industry-specific topics

4

special topic webinars hosted by the CSCR Advisory Board

14

experts from 10 different organizations

265

attendees engaged at in-person and virtual supply chain events



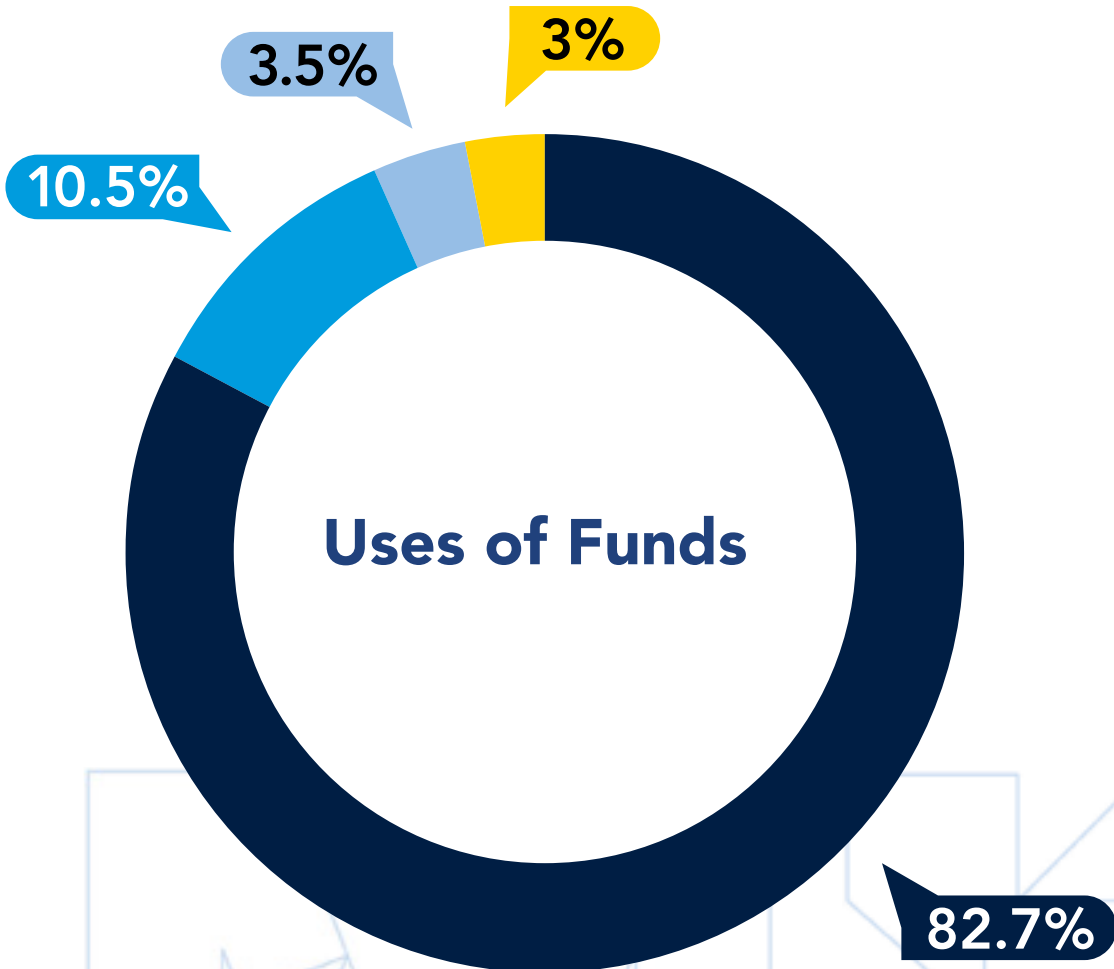
Financial Report

SMITHSONIAN

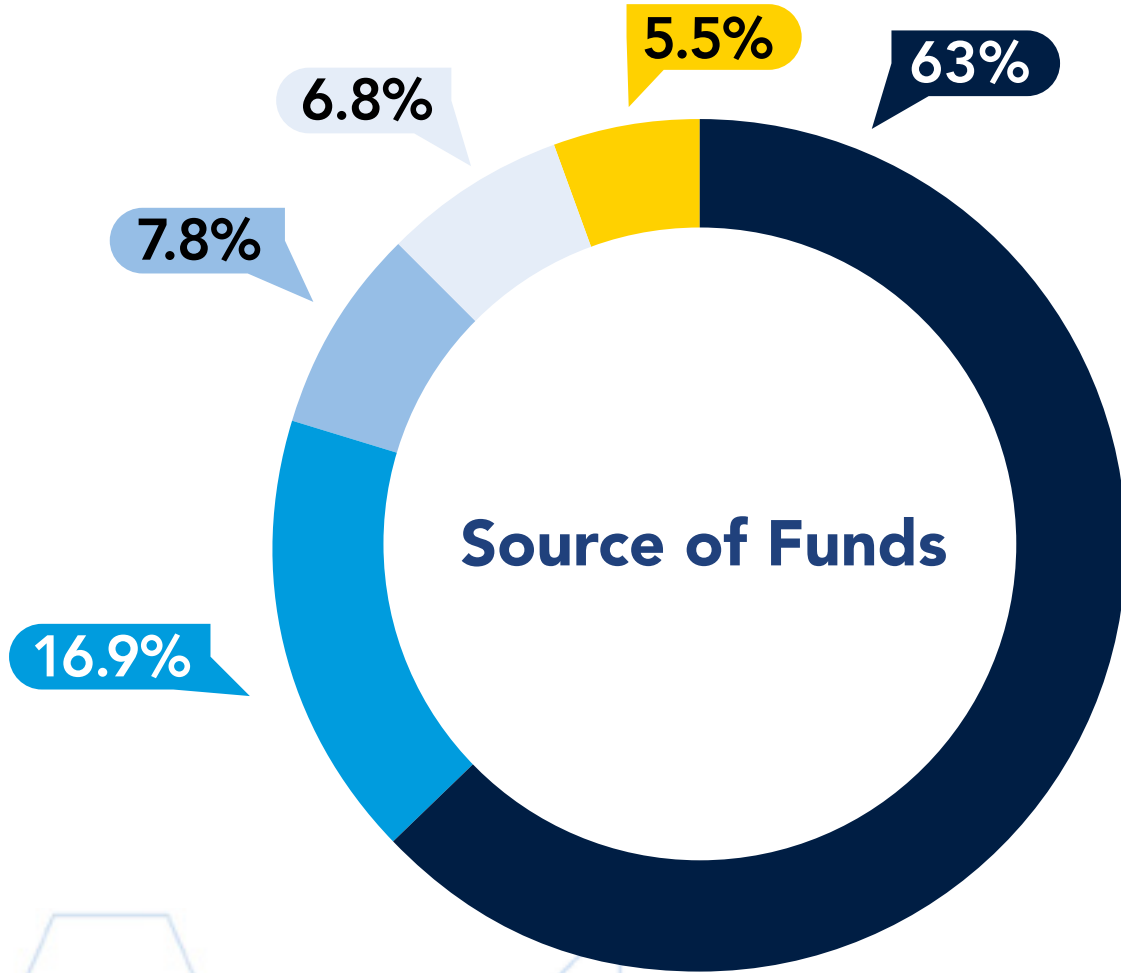


CSCR takes pride in providing a clear overview of the financial inflows and outflows at the center. Much of our ability to shape the field of supply chain management and connect academia with industry is thanks to the generous support we receive from our sponsors. In 2023–24, the college has provided some support for our experiential learning programs with students through education and general funds allocated for student research project support. The reimagined program has an improved infrastructure and a significantly higher level of faculty engagement.

- Salaries and benefits**
- University overhead**
- Events**
- Other operating expenses**

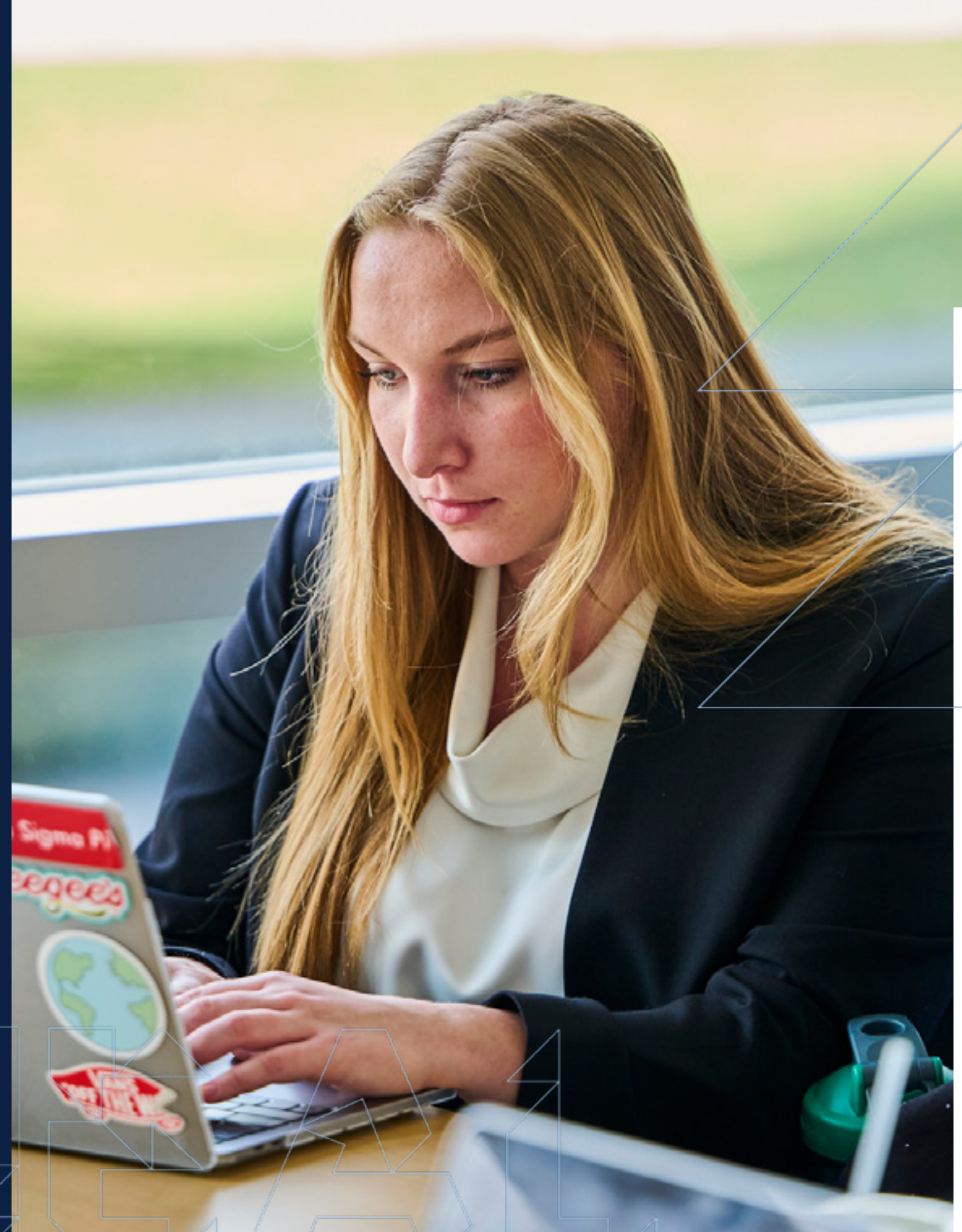


- Sponsor fees**
- Career fairs**
- External projects**
- Education and General Funds**
- Funded research**





Social Impact



SMALL

Embracing Neurodiversity at Smeal

In spring 2023, the Penn State Smeal College of Business was honored to host Natalia Lyckowski, global neurodiversity advancement leader and supply chain inventory transformation leader at IBM, as the featured speaker for Smeal's Executive Insights. The signature speaker series brings high-profile business leaders to the college to connect with students, faculty, and administrators.

On Friday, April 21, 2023, Lyckowski captivated both in-person and online audiences with her insightful and thought-provoking discussion on IBM's supply chains and neurodivergent talent.



“Supply chains move fast, so we have to build in debriefing and ask questions of innovation and reinvention,” said Lyckowski. “The tie-in to neurodiversity is empathy and understanding. We need to understand the blockers so we can bust through them.”

Proudly neurodivergent (ND) and parent of an autistic IT Professional, Lyckowski enables businesses to see the value in embracing ND talent to attain highly skilled and dedicated professionals that may otherwise be overlooked. Part of that work began in 2015 when she joined IBM's "Autism as a Skill" Business Resource Group, which later rebranded as Neurodiversity@IBM to support all neurological differences. IBM, which has a rich history of diversity and disability inclusion, formed the Neurodiversity Business Resource Group (BRG) to create an inclusive workplace culture, promote neurodivergent acceptance, and foster better engagement with neurodivergent individuals.

In 2016, Lyckowski became Global BRG Co-Chair where she helped the organization reach over 1,400 members of both neurodivergent individuals and neurotypical allies. Since then, they have helped launch neurodivergent targeted hiring programs in eight countries and enablement (acceptance) training in over 30 countries.

“In terms of hiring, we're trying to make it more mainstream,” said Lyckowski.

“Instead of asking the question, ‘Do you need an accommodation?’ We ask, ‘How can I help you succeed?’ So, making it more human-friendly.”

Lyckowski's visit to campus was a remarkable opportunity for students, faculty, and industry

professionals to gain valuable insights into the transformative power of understanding and embracing neurodiversity in the workplace. In fact, Lyckowski's session at Smeal was the highest-attended event of the 2022–23 signature speaker series. However, it was not her first interaction with Smeal.



Photo credit: Natalia Lyckowski

The Penn State Supply Chain Podcast, hosted by the Center for Supply Chain Research, was pleased to host Lyckowski for a conversation on neurodiversity prior to her campus visit. She joined our hosts, Steve Tracey and Irv Grossman, to discuss the importance of embracing neurodivergent talent, IBM's rich history of diversity and diverse ability inclusion, and her passion for advocating for neurodivergent talent like herself.

Both Lyckowski's engaging discussion and podcast episode left a lasting impression on the Smeal and supply chain communities, inspiring us all to foster more inclusive environments and take actionable steps toward achieving them.

Inclusivity in Action: DISCOVER Summit Awardees

Hershey, Pennsylvania, is commonly known as “The Sweetest Place on Earth,” but it's also known as the location for this year's DISCOVER (Diversity & Inclusion in Supply Chain) summit, held on October 17–18, 2022. CSCR executive director, Steve Tracey, and Walmart, a CSCR corporate sponsor, were among the nine honored with an award during the event.

DISCOVER is a cross-industry organization that serves as a catalyst for the advancement of people of color in the supply chain and the summit presented an opportunity for the supply chain community to learn, network, and engage in discourse on diversity and inclusion.

Tracey received the 2022 Lighthouse Award, which honors the advisor of the year. Michael del Rosario accepted the 2022 Laurel Crown, which celebrates the sponsor of the year, on behalf of Walmart who has been a CSCR sponsor since 2015 and a sponsor of DISCOVER since 2021. Fun fact, Walmart was first introduced to the DISCOVER organization through their relationship with CSCR.

Other 2022 awardees included Qing Zhao of BCG who received the Soaring Eagle in recognition of her work as volunteer of the year, and USC Marshall who received the Golden Leaf for their efforts in collaboration. The DISCOVER awards, aptly named Sweet Celebrations, debuted at last year's summit and awards for 2021, were also physically distributed this year, because of last year's Covid restrictions.

The DISCOVER award recipients, including last year, are:

- Laurel Crowns: 2021 – Johnson & Johnson, 2022 – Walmart
- Lighthouse Awardees: 2021 – Kevin Lyons, Rutgers, 2022 – Steve Tracey, Penn State
- Soaring Eagles: 2021 – Kartik Sharma, GEP, 2022 – Qing Zhao, BCG
- Golden Leaf Awardees: 2021 – DiversityInc, 2022 – USC Marshall

"It was an unexpected but heartwarming surprise to be named advisor of the year for DISCOVER," reflected Tracey. "There are a lot of great individuals who contribute their time to these efforts and many of them would be equally as deserving. To be singled out for something you do solely out of a passion to make things better in our communities reinforces that, collectively, we're making an impact on people's lives."

The 5th annual conference explored the theme of "Rising Together" through presentations, executive insights, panel discussions, and coaching sessions. Penn State Smeal College of Business was well represented with Steve Tracey and Felisa Higgins, associate dean for undergraduate education, in attendance. Tracey and Higgins also serve as co-academic representatives on the DISCOVER advisory council as well as subcommittee members on the academic engagement workstream.



Photo credit: Daniel Dominguez

Alongside the Smeal leaders, a host of Smeal students were exclusively invited to attend the event on October 17. A mix of supply chain and marketing majors seeking a career in the supply chain field attended the event, including Victoria Cox, Allison Sun, Ngouala Moundhala, Joshua Bisanga, Cristian Miranda, Fabiana Corcino Zegarra, Lydia Mabamije, and Tyquann Crawford. The students participated in all first-day programs and were also matched with a supply chain professional for a mentoring session.

Crawford, a supply chain junior,



Photo credit: Daniel Dominguez

"When your team is diverse and includes many backgrounds of talented individuals, you're given the ability to think differently and establish a wide range of solutions from various perspectives," said the supply chain junior. "This widened range of perspectives will also allow the team members to all learn something new from each other. This is crucial in supply chain because [it] is almost a puzzle with many global, moving pieces. If you have a team with moving pieces or suppliers, partners, employees, employers, and leaders on the case—from different backgrounds and areas around the world—you will be inclined to solve a large range of problems with the wide range of skills your employers bring to the table."

Allison Sun, a second-year supply chain student, felt similarly. "We need people coming from all backgrounds to provide a more holistic view on solutions for problems," she said. Through the summit, Sun had the opportunity to meet successful leaders in the supply chain industry who provided her career-focused advice.

Both students have high hopes for the future and their plans reflect that. Crawford is seeking a career in consulting, specifically in operations transformation or transportation logistics, followed by an advanced degree and an eventual senior-level position with the power to emphasize the importance of DEI. Sun hopes to work in continuous improvement and strategic sourcing in the future and is actively seeking an internship for next summer.

The summit offered a great opportunity for students and professionals alike to network with colleagues across the supply chain industry and engage in diversity and inclusion-focused discussions.

"Penn State, like many other schools, is a strong advocate for advancing diversity and inclusion in both academia and the workplace. If we can get our students engaged in these efforts early, they will have a greater appreciation for the task at hand and hopefully inspire a passion for making change happen when they enter the workforce," said Tracey.

walked away after the conclusion of the summit with several lasting experiences, including forging networking connections with senior leaders, sharing personal experiences with those focused on diversity in the workplace, and collaborating with professionals to find solutions to improve and sustain DEI initiatives.

As a first-generation African American college student, Crawford was particularly excited about the opportunity to connect around the topic of diversity.

Sustainability at Pennsylvania State Park Concessions

Research engagement is fundamental to CSCR's mission. One of the ways the center supports this mission is through student research projects, which include projects with local Pennsylvania high school students taking supply chain courses. Through a partnership with State College Area High School, students can conduct research for class credit under the supervision of Tracie Shannon, CSCR Administrative Director. In spring 2023, State College Area High School students Cody Dietz and Jessie Chen presented their Supply Chain Level 3 project at the State College Municipal Building. Their research was part of the Campus and Community Sustainability Project, which they pursued through an independent study course.

A Retrospective on the Relationship between Penn State and the United States Marine Corps (USMC)



Photo credit: Penn State World Campus

Preface: We recognize the CSCR Impact Report typically highlights successes made within the past academic year. However, there are several partnerships the Center for Supply Chain Research and Supply Chain and Information Systems Department participate in that extend beyond an initial collaboration period. These long-term relationships, like that between Penn State and the United States Marine Corps, demonstrate continued partnership, ongoing engagement, and impact over the course of many years. This retrospective serves as a token of our appreciation for our stakeholders and a testament of synergistic impacts brought by such valuable partnerships.

In the ever-evolving landscape of higher education and military training, partnerships between academic institutions and the armed forces have become increasingly crucial. One such partnership, exemplifying the pursuit of excellence in leadership and academia, is the collaboration between Penn

State University and the United States Marine Corps (USMC). This unique relationship underscores the vital role higher education plays in preparing military leaders for today's challenges.

"Respect. If I had to describe a Marine, I'd say respect," said Robert Novack, retired associate professor of business logistics.

"Respect for education, respect for the institution, respect for the people who stand on the other side of the classroom."

Penn State has a long-standing relationship with the Marine Corps that began in 2000 when Penn State was awarded a contract to expose Marine Corps officers to best practices in logistics. John E. (Gene) Tyworth, Emeritus John J. Coyle professor of Supply Chain Management, said the Marine Corps Logistics Education Program (MCLEP) emerged from a Center for Supply Chain Research (CSCR) consulting firm project with Marine Corps on logistics modernization.

"The program had visibility up to Commandant and Deputy Undersecretary level, who at the time were Major General Richard Kelley, and Roger Kallock, Deputy Undersecretary of Defense Logistics. After retirement, they became active in CSCR sponsor meetings," said Tyworth, who was also the Supply Chain and Information Systems Department Chair at the time.

MCLEP was formatted as a series of two-week programs held at Penn State– University Park campus; and across the three Marine Expeditionary Forces, the Marine Corps' principal warfighting organizations during large crises, located in Pendleton (California), Lejeune (North Carolina), and Okinawa (Japan) as well as at off-site locations including Albany (Georgia), Quantico (Virginia), and New Orleans (Louisiana). William "Skip" Grenoble, former Naval officer and previous CSCR executive director during 2000–2014, and John J. Coyle, founding and executive director of Center for the Study of Business Logistics (later renamed the Center for Supply Chain Research) during 1989–2000, were both instrumental in getting the program off the ground.

A partnership that educates high-ranking military officials

The success of the MCLEP led to the creation of the Marines Corps Logistics Fellowship Program, which adapted to its current form in 2007 when it received the American Council on Education (ACE) accreditation. The Marines Corps Logistics Fellowship Program condenses the Master of Supply Chain Management program into a one-year hybrid program that combines online courses with classes MBA students take at the Penn State Smeal College of Business's University Park campus. The program was designed to fast-track two senior officers, ranging from major to colonel rank, in the logistics discipline for a one-year tour at the University Park campus to complete the master's degree.

"It was an interesting challenge for our department and the fellows, for they were accomplished leaders who now played roles as colleagues, friends, and students," remarked Tyworth on the early days of the program. "They were invited to professional and social events hosted by the CSCR and the SCIS Department. They become part of "CSCR family" during the year and most kept in touch with staff and faculty for years after."

The program is taught by world-renowned faculty from Smeal's department of supply chain and

information systems. Tyworth, a former active-duty officer and a senior reserve officer at the time, contributed to the annual performance reviews (APR) during the first two years of the program before regulations changed the APR requirements. Since its inception, the program has had more than 34 graduates and boasts four alumni who served or are currently serving as senior general officers: Lieutenant General Robert Ruark, Major General Vincent Coglianese, and Lieutenant General Charles Chiarotti, and Brigadier General Kevin Stewart.

"Marines are very mission-oriented, so when they are sent to do something, they will give every ounce of effort to accomplish that mission," said Novack.

"When they are sent to a place like Penn State for a year – the training they have, the respect they have for the education, the respect they have for the institution . . . they just soak up knowledge like a sponge."

When a Marine excels in their current rank, they become eligible for promotion into the next. One way to supplement that growth is through educational advancement like secondary school. Before the contract was awarded to Penn State, every other secondary school was within the military, according to Novack.

Novack also noted that Penn State has the highest percentage of generals who have graduated from a Marine Corps fellowship and nearly every graduate of the program, if not all, advanced in rank upon the completion of the program.

"You put 60 Marine Corps officers in a room, and they are attentive. They question everything. They want to know, they want to learn," he said.

From the very inception of the Marine Corps Fellows Program, USMC leadership keyed in on the tremendous value of partnering with Penn State. Major General Richard Kelley served as deputy commandant for installations and logistics at US Marine Corps Headquarters during the creation of the Marine Corps Logistics Education Program. Kelly was responsible for leading, managing, and modernizing Marine Corps logistics around the world.

According to the 2005 Distinguished Alumni Awards Ceremony booklet, Kelly's highest priority was modernizing and streamlining the Marine Corps' supply chain as well as helping to educate future supply chain leaders. This is why he, along with the Deputy Undersecretary of Defense Logistics, worked to develop the MCELPs with the Center for Supply Chain Research. In the span of 23 years, the program has adapted to account for the rapid growth of the supply chain and to meet the needs of the incoming Marine Corp fellows.

"The Fellows Program has enriched the SCIS, CSCR, and Smeal community and contributed to the USMC's effort to transform and modernize its logistics management and practice," Tyworth said. "We had the honor of meeting and working with truly outstanding leaders in this endeavor."

Women in Supply Chain

Gender equity in the supply chain is a pressing issue that demands attention and action. Historically, the supply chain industry has been characterized by gender disparities, with women often underrepresented in leadership positions and facing barriers to advancement. Thus, the Center for Supply Chain Research created the Women in Supply Chain website as a dynamic platform dedicated to celebrating gender diversity and empowerment within the field of supply chain management. It is a vital resource that offers a wealth of information, resources, and support to women pursuing careers in supply chain management, logistics, and related industries.

In 2022–23, the Center for Supply Chain Research featured 12 female supply chain leaders ranging in professional capacity from research associates to supply chain managers, Penn State students, and vice presidents. Seven written profiles were featured alongside three podcast recordings and two video interviews. CSCR is pleased to feature two professionals who exemplify the values of the platform and possess powerful stories of leadership and career progression.

Aligning Values



Lauren Chuday Gallagher is Vice President of Merchandise Operations supporting Entertainment, Toys & Seasonal at Walmart Inc., with almost 15 years' experience leveraging the supply chain to help people save money and live better. Gallagher has operated in high visibility roles across Merchandising and Merchandise Operations. Her experience spans complex departments in both General Merchandise and Fresh. She leverages a results-focused mindset to combat the impacts of allocation, weather-related business complications, and compliance restrictions to satisfy customer demand and increase market share. As a dynamic leader with a proven ability to exceed expectation, Gallagher shares her thoughts on leadership: "I've always been interested in leadership whether that be formal or informal roles . . . so when I thought about where I wanted to work, I wanted to work for a company that was big enough to provide me with opportunities to grow and learn and change in my career. That is what really attracted me to Walmart in the

first place" she said. "When I think about what motivated me to stay at Walmart and pursue roles that had greater leadership opportunities, it was really that my personal values aligned closely with the mission of the company."

Gallagher holds a bachelor's degree in supply chain and information systems from Penn State and master's degree in operations management from the University of Arkansas.

Applying Experience

Caitlin Dunn is currently the lead of supply chain optimization for the supply chain strategy and analytics team at American Eagle Outfitters. Her primary focuses include network design and orchestration as well as inbound optimization. She first began her career in supply chain when she joined the supply chain strategy and support team at Dick's Sporting Goods. During Dunn's seven-year tenure there, she helped develop and maintain supply chain KPI reporting, managed DC supply procurement, and ran network design models to determine distribution center network capacity and growth.



"I was fortunate to support the analytics behind Dick's Sporting Goods, standing up its fourth and fifth DCs and evolving its fulfillment strategy," Dunn shared. "Now, over the past four years, I have been working in supply chain optimization at American Eagle to pinpoint opportunities to improve the flow and speed of product and processes, reduce costs, and enhance supply chain reporting and analytics to support the responsibilities of cross-functional teams."

Some of the most prominent highlights of Dunn's work at American Eagle include automating processes for machine learning, providing better supply chain visibility through reporting and analytics enhancements, as well as creating redundancies for risk mitigation.

Like many Penn State graduates, Dunn remembers the support and mentorship of Dr. Bob Novack, a Smeal supply chain professor who has been making an impact on Penn State students and the supply chain discipline for decades. Since her graduation, Dunn noted that Dr. Novack, as well as CSCR Administrative Director Tracie Shannon, have continuously provided career guidance and network opportunities. Due to her strong ties with Penn State, Dunn attends Penn State career fairs and conducts interviews on behalf of her company.

Dunn finds that empowering students ahead of their job-seeking days can make all the difference, in addition to providing safe spaces to learn and grow. She reflected an impactful experience when a supply chain recruiter helped prepare her for her interview with resume and cover letter guidance. The recruiter encouraged her to apply to other companies beyond the one he was representing, which helped boost her confidence.

"The fact that someone invested their time to help me find my career path before I was even hired with the organization was truly empowering," she recollected. "I have also been very fortunate to work at a women-driven company like American Eagle Outfitters. They helped teach me the importance of mentorship, knowing when the mentorship is not a right fit, and how it is a truly symbiotic relationship where the mentors and mentees learn from each other."

This Penn State graduate has ultimately learned that working in supply chain requires a healthy dose of empathy, creativity, innovation, and boundaries.

"Talking to cross-functional partners on how supply chain impacts them has been so valuable in understanding how processes impact their roles and experiences as well as learning how their decisions impact supply chain," said Dunn. "It is important to challenge ideas and processes but with a sense of curiosity and willingness to innovate."

A Legacy of Impact

Novack Logistics and Transportation Symposium



On Tuesday April 18, 2023, the Center for Supply Chain Research hosted the Novack Transportation and Logistics Symposium. The event connected current students, faculty, and Penn State alumni around trends in transportation and logistics.

The symposium was held in honor of Dr. Robert "Bob" Novack for his contribution to the discipline and his many years of service to Penn State University, the Smeal College of Business, and both the Business Logistics, and the SCIS Department.

Throughout the day, the symposium featured speakers and panel sessions on research opportunities in logistics, the impact of business logistics and supply chain, and a Q&A with the man of the hour himself.

“He’s the kind of person who shows up day in and day out. He’s got a passion for his craft, and after 37 years . . . that amounts to something pretty special,” remarked Karen Burlingame, R&D Procurement Category Manager at Johnson and Johnson and one of the symposium attendees.



Novack, associate professor of supply chain management in the Department of Supply Chain and Information Systems, retired in May. Through his 37-year tenure at Penn State, Novack held many roles that shaped the enviable Supply Chain and Information Systems Department, but none more important than that of a teacher. Not many can say they helped launch the careers of 25,000 students, but not many are Bob Novack.

A year prior to his retirement, Novack relinquished his role as the faculty advisor for the Sapphire Leadership Academic Program. At the time of his departure, the program boasted an acceptance rate of just 7 percent and a remarkable three-year streak of achieving 100 percent job placement for its graduates.

What follows is a brief look at some of the outpouring of gratitude and love Novack received on CSCR’s LinkedIn page.

Michael del Rosario
Senior Director, Walmart Transportation

Great event and congratulations to Dr. Novack on his long list of achievements and impact to the industry. We appreciate the partnership over the years, and will be ready to take him for a spin in a new Walmart truck anytime!

Emily Waschenko
Sr. Manager II, Walmart Fulfillment Services

Dr. Novack has undeniably left his mark at Penn State & Smeal. His guidance, passion, and mentorship were among the highlights of my time studying supply chain at Penn State. I’m so grateful our paths crossed & appreciate all he’s done for the program and student body over the years. Congratulations Dr. Bob Novack!

Creighton Hottel
Supply Chain Solutions Specialist

It was an honor and privilege to learn from Dr. Novak. This man is a MAJOR reason for developing my passion for all things Supply Chain. Congrats for an absolutely fantastic career! The impact made was beyond anything I could have ever imagined. An absolute legend and one of the nicest guys you will ever meet. Enjoy your well-deserved retirement, my friend!

Eden Jacoby
Cost Analyst in the Supply Chain Development Program,
Dell Technologies

Lucky doesn't even begin to describe how I feel to have been mentored, taught, and befriended Dr. Novack. Without a doubt, he transformed my college experience and my future professional and personal life.



Partner Engagement



SMERL

Thank you!

We at the Center for Supply Chain Research wanted to take a moment to express our heartfelt gratitude for our partners' generous support and sponsorship. Your commitment to our center has played a pivotal role in advancing our mission of fostering excellence in supply chain research, education, and industry collaboration. With your partnership, we have been able to create innovative solutions, facilitate knowledge exchange, and empower the next generation of supply chain leaders.

Your financial support, expertise, and engagement have had a profound impact on our initiatives, enabling us to undertake meaningful projects, host insightful events, and provide valuable resources to our students, faculty, and fellow industry professionals. Your dedication to our cause has strengthened our position as a leading hub for supply chain research and innovation. As we continue to strive for excellence and drive positive change in the field of supply chain management, your partnership remains invaluable to us. We look forward to our continued collaboration and the opportunity to achieve even greater heights together.



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Shannon Beecher
Vice President, Services Supply Chain, IBM

New Board Members

- **Jessica Gerhard**
Director, Demand Planning & Customer Supply Chain, The Hershey Company
- **Ron Volans**
Head of North America Janssen Deliver, Johnson & Johnson

Returning Board Members

- **David Vieira**
President and Chief Executive Officer, CLX Logistics

Special Recognition

CSCR would like to offer special thanks to several key sponsors and friends for their unique contributions and collaborations in the past year. Their support has been instrumental in achieving the center's goals and mission.

The National Association of State Procurement Officials (NASPO) is dedicated to advancing public procurement through leadership, excellence, and integrity. In the past year, the non-profit association provided CSCR with \$5,000 in funding to be awarded to eligible recipients who are interested in a career in public procurement. In 2022, Nicholas Marcolongo and McKenna Fritz, both Penn State Smeal College of Business supply chain students, were selected to receive the scholarship.

Dell Technologies sponsored an exciting real-world learning opportunity for Penn State freshmen and sophomore students interested in the Supply Chain and Information Systems or Management Information Systems majors. The company hosted the Dell Case Competition which provided the students the chance to build their analytical and presentation skills as well as gain important insights from interactions with Dell Technologies professionals and Supply Chain and Information Systems faculty. The winning team also received cash awards totaling \$800.

In Memoriam

The Center for Supply Chain Research's founder, Dr. John J. Coyle, passed away on January 16, 2023. Not only was he a transformational leader in the education space, but his legacy has profoundly impacted countless students, colleagues, and the foundation of supply chain at Smeal.



Highly respected as a founder of the Penn State Smeal College of Business's Business Logistics major, Coyle joined the faculty in 1961 and was instrumental in the development of the business logistics and transportation programs. Often lauded as "writing the book on business logistics," it's no surprise he was the first person to teach a course at Penn State in what many Penn State Smeal Alumni recall as BLOG. His innovative spirit was boundless, employing VHS technology and remote broadcasting to distribute his classes remotely long before the Internet came into being.

Coyle served as the founding Center for the Study of Business Logistics executive director from 1989 to 2000, as well as Director of Corporate Relations for the then renamed Center for Supply Chain Research from 2000 to 2010. He also held important leadership roles in both the college and the university throughout

his multi-decade career. Coyle remained Professor Emeritus of Business Administration and continued to publish thought-provoking research right until his passing.

Throughout his distinguished career, Coyle received many accolades, including 12 college and university awards for outstanding teaching and advising, the Distinguished Lion Paw Award for outstanding service to the University, and the Council of Logistics Management's highest honor, the Distinguished Service Award. However, perhaps his most enduring legacy will be the impact he made on the supply chain discipline and the countless leaders who were fortunate enough to learn from him.

Closing Thoughts

We invite you to join us in redefining the boundaries of supply chain research and practice, forging a path toward innovation, sustainability, and excellence in the ever-evolving global supply chain landscape. Together, we will shape the future of supply chain management, one strategic step at a time.

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