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# Rutgers Supply Chain Management Thought Leaders

## Supply Chain Disruptions, Latent and Manifest Resilience

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During the past few decades, supply chains have continually become extended and more complicated. Product proliferations, globalization, outsourcing, and improvements in transportation systems and communication technology have all helped to raise the dependence and inter-dependence of organizations across a supply chain on one another. Not surprisingly, these inter-dependencies have raised the vulnerability of buyers and suppliers to disruptions.

It seems that the severity and frequency of supply chain disruptions is increasing. In response, more attention is being placed on building resilient organizations. Resilience is the ability to bounce back from disruptive events and to get back to operating. Programs such as business continuity plans, crisis management plans and emergency evacuation procedures are all meant to augment a company's ability to get back to normal. With the rise in significance of supply chain disruptions, resilience plans are also starting to incorporate supply chain issues. Not a week goes by where I am not invited to attend a conference or speak on a panel about supply chain disruptions and organizational resilience. Indeed, focus on organizational resilience seems necessary. In a recent survey conducted by Zurich Insurance, 15% of companies confirmed that they have experienced disruptions causing in excess of $1 Million. Data collected by the Supply Chain Disruption Research lab (SCDrl) at Rutgers Business School suggests that over 30% of manufacturers are highly concerned about their tier 2 and above suppliers' resilience.

But there may be a systemic concern in how we are starting to address supply chain disruptions. Some argue that most companies are programmed to build their efforts based on what they have experienced in the past, rather than what they will experience in the future. Often resilience enhancements are based on response to high probability and low impact (HPLI) type disruptions, while the advent of low probability-high impact (LPHI) disruptions has become more prevalent. LPHI disruptions can be natural (such as Superstorms previously unseen on the east coast of the United States), or man-made (such as the BP oil spill in the Gulf of Mexico).

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Companies can improve the way they "bounce back" using a combination of two types of resilience. The first is latent resilience – what is done to prepare for unfortunate events and to limit their potential for occurring beforehand. In the supply chain arena, latent resilience can be developed through system redundancies, system flexibilities and innovation. For instance, duplicate production lines, buffer inventory and extra capacity are forms of system redundancies. Flexibility comes in the form of interchangeability or commonality (in parts, personnel, equipment, suppliers and customers). Innovation can be continual improvements in processes and products so as to limit the potential damage of a disruption. Latent resilience is particularly effective for disruptions that the firm has observed before. For instance, it is much easier to know how to manage a supplier plant fire if there is organizational memory of the type of damage that it can cause across the supply chain.

However, many of the new forms of supply chain disruptions show unique characteristics that companies may not be familiar with. The Tsunami/nuclear disaster in Japan and Super-storm Sandy are examples of large scale disruptions that were difficult to fully anticipate and prepare for. Facing these types of disruptions is particularly dependent on how the response and recovery efforts are executed. Ample anecdotal evidence suggests that incorrect executive decisions made a bad situation worse because resources and attention were not directed correctly.

Leadership and system behavior during response and recovery (or R2) is the other type of resilience, which I refer to as Manifest Resilience. Manifest Resilience in systems can be "ready-made" packets of response that can fit any unforeseen event— one that has been experienced before or not. Manifest resilience in systems can also be in the form of distributed decision making— so as to avoid the need for a central body to manage all the decisions. For leadership, manifest resilience is in the ability to handle difficult situations and to make the "tough choices" quickly and responsibly. Resilient leadership combines care and concern through situational awareness, with the agility to make expeditious and on-the-spot decisions.

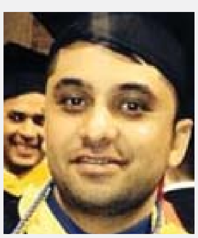
Much of the effort, resources, and investment placed on developing latent resilience can be wasted if manifest resilience is not there to properly use them. Years of preparation and planning can go to waste, simply because the leader did not make the right decision, or the systems in place did not respond the way they were intended to. Despite the importance of manifest resilience, as compared to latent resilience, our understanding of manifest resilience is quite limited. The Center for Supply Chain Management and its affiliate laboratory, SCDrl, are placing focus on this particular phenomenon.

# RBS Supply Chain Management Students Get Real-World Experience in a Variety of Ways

## Industry Client Projects

Rutgers Business School's supply chain management students have an opportunity to collaborate with our industry partners through one of the most popular courses in the major, "Industry Client Projects." Similar to a consulting experience, the students must analyze a real-world corporate project, identify feasible solutions, and then make a final recommendation to business executives at the company's headquarters. Below are sample projects and comments from our students.

**Alexander Hayes**
**Class of 2014**
Alexander Hayes led an industry client team that worked together to form a sourcing strategy for PSEG's network protectors used in electricity distribution systems. The scope of work included providing supplier profiles, strategy recommendations, a detailed market analysis, category plan, and SWOT analysis, and utilizing Porter's five forces of analysis. According to Hayes, "As a team we were able to apply concepts learned in the classroom to a real world situation. This experience gave our team an understanding of the level of responsibility that is required of someone working for a Fortune 500 company."



**Waqas Nawaz**
**Class of 2014**
Waqas Nawaz worked for a semester with a global consumer electronics firm, where he gained valuable work and personal experience. "Over the period of one semester, I was able to get insight on how the company analyzes their data by utilizing the skills we learned in our classrooms. As team leader, I gained the knowledge, expertise, and time management skills needed to be successful. By taking this course, I was fortunate to network and work with many industry professionals who provided me with career advice and tips. Overall, this class was more of an internship rather than a normal class because it really gave me that "hands-on" experience I was looking for."

**Jonathan Tezbir**
**Class of 2014**
Jonathan Tezbir had a great experience at a global consumer product company on a semester-long project. "Industry Client Projects is the type of class that gives students a real-life, real-world, hands-on experience. I personally got the opportunity to lead a team of four very bright individuals. Working together, we produced a report of global travel management companies which were suitable and qualified to handle our company's corporate travel needs. Not only is this something which really stands out on a resume, but it is also an experience from which I really learned a lot. It helped to improve my time management and communication skills, my public speaking abilities, my leadership skills, and the list just goes on and on."

## Student Internship and Co-Op Opportunities

RBS students are also gaining valuable business skills by working at various companies in internship and co-op positions. They are going beyond the classroom and further developing their analytical, leadership, teamwork, communication and project management skills, while adding value at their companies.

**Michelle Gromashchuk**
**Class of 2014**

During her three months working as a Customer Development Intern on Proctor & Gamble's Wal-Mart team, Michelle Gromashchuk developed various strategies designed to deliver significant sales growth to the Cover Girl business. Michelle presented her projects to Wal-Mart's Cosmetics Buyer as well as to the P&G Leadership Team. This internship was very analytical and teamwork-based, allowing Michelle to gain experience working with P&G's largest customer. After completing her internship, Michelle secured a full time role with Johnson and Johnson in their Consumer Sales Leadership Development Program.

**Matthew Piazza**
**Class of 2014**

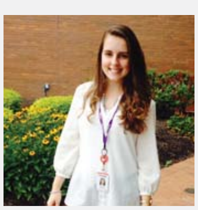
Matthew Piazza has had experience with two different internships. "Over the course of my two internships, I saw the academics I study come to life! It was very exciting. At the Ford Foundation, I worked in the Purchasing department, where I analyzed a Request for Proposal response that was developed to optimize the functionality of their mailroom service. After the Ford Foundation, I became part of The Campbell Soup Company family. I refer to them as a family because the company culture was very warm and open to idea sharing and information. It was through this family-oriented culture that I learned beyond what I ever thought I would learn in such a short period of time. It was the experience that helped change my future and mold my career. Throughout my three-month stay at Campbell's, I analyzed Request for Proposal projects spanning multiple global suppliers and multiple ingredients. If it were not for my internship experiences, I would not have been fortunate enough for the opportunity to return to Campbell's full time upon my graduation."

**Jasdeep Sandhu**
**Class of 2015**

At a global BioPharma company, Jasdeep Sandhu developed global reports for all of the American and European regions, helping to better understand and manage future demand and backorders. To accomplish this, Jasdeep worked closely with the replenishment planners in his assigned geographic regions to help prevent and minimize global back orders using the reports he developed and leading meetings with Planners and Directors weekly to help manage these processes.

**Xin (Sally) Shen**
**MBA Class of 2015**

"Selecting the RBS supply chain management program to pursue my MBA degree was definitely one of the best decisions I ever made. As a well-structured program, RBS SCM delivers a world-class education in Supply Chain Management through its faculty on the cutting edge of their fields, and provides tremendous opportunities to students like myself with its strong connections to various industries. In my first year in the program, I have not only obtained an academic education that exceeded my expectations and polished my professional skills as a supply chain management professional, but also made significant progress in my leadership skills and executive presence by participating in case competitions, Supply Chain Student Initiative Club activities, and guest speaker and networking events. With the guidance and help of the faculty, I have successfully joined Johnson & Johnson as a summer intern in the Procurement Leadership Development Program (PLDP)."



**Marchela Stancheva**
**Class of 2016**

Being an intern at a major global 3PL provider during her freshman year was a great experience. Marchela Stancheva worked closely with her manager to support well-known product imports and to establish total logistics visibility. Working with overseas offices to ensure access to critical data on a daily basis also helped Marchela improve her communication and analytical skills. As a sophomore at Rutgers, Marchela will be relocating to Pennsylvania to start a co-op with Mondelez. Her involvement with the two Supply Chain Student Clubs (BASE and SCMA) at Rutgers helped her prepare for both the internship and co-op. Through her leadership positions in both clubs, Marchela learned the great importance of teamwork, as well as presentation and analytical skills.

# New Operational Challenges for Global Supply Chains in Emerging Markets

*Lei Lei, Ph.D., Chair and Professor, Department of Supply Chain Management & Marketing Sciences, Rutgers Business School, and Director, Rutgers Center for Supply Chain Management*

Emerging markets are the primary business growth areas for the next century and have been rapidly shaping the global demand of our products and services, growing almost three times faster than developed markets and accounting for an average of 65% of global economic growth through 2020 (Source: monitor.icef.com, March 2014). Expanding businesses in the emerging markets, however, impose many new challenges to global supply chains. In addition to securing talent and building a global mindset, there are also many operations-related challenges, such as supply chain network optimization, building up flexibility and resilience, and supplier re-evaluation.

**Supply Chain Network Optimization**

The well-known BRIC (Brazil, Russia, India, and China) and new clusters in South America and Africa (such as Argentina, Chili, South Africa, and Kenya) define the fastest growing leaders in the emerging markets. To expand business in these new markets under swinging commodity prices and logistics costs, a firm needs to revisit its supply chain strategies and move its sourcing and production closer to the target markets to reduce the transportation/freight and in-transit inventory costs, and to improve the lead time and customer responsiveness. For example, for some of the emerging markets, Mexico could be a more advantageous manufacturing base. The advantages of producing in Mexico include a highly competitive labor cost, a more steady economic status, shorter freight shipping time to South and North America, and less coordination effort due to similar time zones and culture. Moving the sourcing and production closer to target markets also changes the configurations of supply chain networks because of the new distribution centers, facilities, and transportation infrastructures needed to support the business growth. Therefore, a timely optimization or re-optimization of supply chain networks is critical in order to minimize the inefficiency that erodes the profit margin. Furthermore, to succeed in these unpredictable, fragmented, and individually unique emerging markets, a firm must develop and tailor an effective demand-supply process, which in turn depends on the supply chain network optimization.


**Building Up Supply Chain Flexibility and Resilience**

Companies expanding their businesses in emerging markets will have to accept the reality of shifting politics, unstable economies, lack of basic infrastructure, and lower levels of visibility. In addition, different growth rates across various emerging markets mean that rising labor costs could quickly change the priority of investment in different countries. To operate under such uncertainties, building up supply chain flexibility and resilience becomes ever more critical to reduce the impact of disruptions. Supply chain flexibility here refers to the competency of handling rapid changes in demand, unavailability of raw material supplies, and sudden capacity shortage, while supply chain resilience refers to the ability to minimize the time gap and the ability to return to normal status after an incident. To build up flexibility and resilience, a firm must be able to detect a problem signal as early as possible, to improve the accessibility of information, to support a quick reconfiguration in response to the changes by allowing transportation alternatives and variable bill of materials, and to design a strong contingency plan. It is never "one size fits all"; a company must employ multiple and decentralized supply chains that are designed and tailored toward resiliency under a variety of circumstances. Backup capacity in a different region may help a firm to hedge against uncertainty. For any company that is planning to expand operations in emerging markets, it is important to shift the mindset from "integrated" and "cost-minimization" to "dynamic" and "agile," and be willing to deal with the real, rather than the ideal (Source: http://www.mckinsey.com/insights/operations).

**Supplier Reevaluation**

Expanding business growth in emerging markets requires an immense investment in new product designs to meet the needs of a huge and diverse customer base who generally have less cash to spend than their Western counterparts. From the rising Asian consumers, particularly in China and India, to the large and vibrant metropolitan areas with fast-growing urban middle classes in Latin America, and to Africa's young population that is expected to double by 2045 (Source: Africa Renewal, May 2013), buying power and consumer preferences are drastically different. The new product design criteria for the 21st century has evolved, however, toward minimizing material costs, resource consumption (e.g., utilizing biomaterials, plastic fabrications, alternative materials, etc.), and dependency on external factors (to reduce the risk of disruptions), while at the same time increasing product reusability, recyclability, and multi-functionality. Such changes in design criteria require a firm to carefully reassess the existing, mostly low-cost, supplier base, and to build well-designed, market-targeted, and locally-tailored products that enable differentiation in the crowded emerging markets.