Welcome to the RISK Lab!

In the following pages, you will find candidate projects from sponsoring companies under the RISK Lab (DECS 920) for FALL 2015.

The projects listed include working with actual company data, developing meaningful analytical models for managerial decision-making, and presenting results and recommendations to company executives. Most projects will require some level of Non-Disclosure Agreement (NDA) with the sponsoring company.

Please feel free to contact me at 847 467 2148 or russell-walker@kellogg.northwestern.edu with any questions and interest.

Thanks for your interest.

Russell Walker, Ph.D.
Clinical Associate Professor
Kellogg School of Management
Northwestern University
**Moore & Warner Farm Management**  
[www.moore-warner.com](http://www.moore-warner.com)

**About the firm**  
For over 160 years and six generations, Moore & Warner and its predecessor family entities have owned and managed farmland assets throughout the American Midwest and Great Plains.

Today, Moore & Warner guides the acquisition and management of direct farm holdings for families, family offices, private investors, and institutions who prioritize the long-term wealth generation of steady-handed stewardship and progressive management.

Moore & Warner also provides expert consulting services and project support to private equity, venture capital, and corporate clients who require the domain expertise and on-farm perspective to contextualize rapidly evolving opportunities in agtech, ag big data, and row crop production systems.

**Project Description:** Building a grain marketing analysis and hedging tool for farmer commodity risk

The volatility of today’s commodity markets has increased the importance of commodity risk management and hedging for the farmers and landowners who derive their livelihoods from grain production. Unlike financial investors or traders, however, farmers and landowners face both production risk (actually growing a field crop) and market risk (the price received for that crop) in raising corn, soybeans, wheat, and other commodity crops.

In this project, the team will learn how:
- farmers sell their grain (and to whom);
- pricing the physical product and selling into the supply chain is related to Chicago Board of Trade prices;
- commodity exposure in an operating production business is different than in a pure trading environment; and
- Farm Bill programs and crop insurance impact profits and risk management.

The team will be given wide latitude in pursuing these key project components:

1. Identifying the most commonly used grain sale and hedging strategies used by farmers. These include forward sales, dollar-cost averaging, commercial storage, futures hedging, and puts and calls in the options market;

2. Developing a pricing tool using past CBOT data to evaluate various grain sale and hedging strategies against historical data; and

3. Developing a forward-looking pricing and profitability model to support scenario analysis and farm profit sensitivity analysis given key assumptions about farm input costs, grain
markets, yield, crop insurance payments, and other inputs. Solutions to mitigate or remove the risks are ideally desired.

This opportunity is sponsored by Jonah Kolb ’13 who is also an alumnus of Risk Lab and founding leader of the Kellogg Food and Agribusiness Club. He has a great leader in agribusiness.
About

The NorthShore Center for Simulation and Innovation (NCSI) at NorthShore University HealthSystem in Evanston, IL recently expanded its simulation center to 13,000 square foot, including 7 simulation rooms (2 fully operational trauma rooms, 3 patient rooms, and 2 operating rooms) and a surgical lab for advanced surgical training.

Our center is now in the top 5% nationally in terms of size for hospital-based simulation centers (ie not based directly on the campus of a medical school university campus) and our learner throughput is likely in the top 1% as we have 400-800 learners come through our center on any given month. We are multidisciplinary in nature with attendees from nursing, pre-hospital, medical students, residents in various fields, and attending physicians. As an institutionally based simulation center, our audience focuses more on "adult" learners (ie current practitioners - physicians and nurses) more than university-based medical school simulation centers who focus more on medical students and nursing students.

The nature of complex surgical operations involves many levels and types of risks. The simulation center is inherently focused on risk reduction and operational excellence. The project objectives focus on meeting these overall goals.

1. Creating the business case and operational workflow necessary to increase utilization of B-Line Simulation Management Software.

   a. This project would have the students working with our techs to determine the various components of the simulation management software that could be optimized. (For example, today, only a fraction of our users are actively engaged and using the system fully.)

   b. Project goals

      i. Decrease time/effort spent performing manual data entry by leveraging the simulation management software

      ii. Identifying ROI associated with technology upgrades to facilitate integration of B-line in workflows (iPads, kiosiks)

      iii. Improving overall utilization of the system in both surgical and medical simulation - providing gap analysis of current functionality that is used vs. that which is under, or not utilized – and then identifying workplan to achieve integration.

2. Reviewing historical utilization rates by department/learner type, and identifying the correct allocation formula to achieve equitable distribution of expenses.
a. Identify data sources – if data sources are not automated, identify mechanism to reduce manual workload associated with tabulating utilization

b. Review yearly budget/financials, and identify potential allocation back to hospital departments – likely will need a few proposals given the political reality of non-revenue generating related expenses.

c. Review current utilization of the center

   i. Up-time

   ii. Down-time

   iii. Number of optimal FTE resources needed to staff center vs. how many resource employees are necessary

d. Given historical utilization, forecast the number of external courses needed for the center to break even in FY2016.
Digital Globe Satellite Imaging  
www.digitalglobe.com
&

Edelman Crisis Management  
www.edelman.com

About

DigitalGlobe, a leading satellite imaging company (https://www.digitalglobe.com/about-us) operates at the intersection of many business verticals by providing information and data on everything from locating airplanes that have crashed into the Indian Ocean to population migration trends. There is very little in regulatory apparatus and oversight governing DG’s operations and thus their Board of Directors is eager to construct an organizational risk design model based on principles-based compliance and regulation approach. Given the many risks involved in the satellite imaging business—from privacy rights and national security to sabotage and information flaws— the Board firmly believes that a rules based compliance system will not provide for the elasticity in decision making need to manage risk comprehensively. The board has decided that employees must be empowered to make decisions in a dynamic environment that requires multi-dimensional thinking and actionable principles that guides value(s) based decision making around risk.

The team will work with Harlan Loeb of Edelman associates (leading risk and crisis management firm) that is advising Digital Globe. Harlan is a long-time sponsor or Risk Lab and brings a great depth of knowledge and experience with risk and crisis management.
Menus of Change
www.MenusofChange.org

Project Descriptions
There are 2 projects available with Menus of Change. Each looks at a critical input to the world’s food supply. Risks associated with the use, availability, pricing, and environmental impact follow and will drive the risk-decision approach to the use of these food inputs.

What Drives Meatier Returns or Less Meatier Returns
Much has been made in recent years about the environmental impact of meat and also the impact of climate change and water on meat and livestock production, including unprecedented cost increases and volatility. This comes at a time when a growing number of consumers are looking to increase the share of plant-based foods that eat, foregoing a meat for a few meals each week or seeking options that smaller amounts of meat. For instance, while McDonald’s is built around the quarter pounder, fast growing competitors like Five Guys feature a 1/8 pounder and Shake Shack and 1/2 mushroom patty and 1/2 beef double stack. New restaurant companies are being more overt, with companies like Chipotle, vc-backed Sweet Greens and Illinois own Roti Grille among the many that use meat as a condiment and offer a range of plant-based options. The shift towards offers that feature more plants and a bit less meat may match some consumer values and also drive health and environmental benefits. But what’s the impact on business performance?

The challenge would involve identifying and comparing a set of plant-forward companies and compare them to a set of legacy restaurant companies. This could include US or global restaurant or food companies, probably publicly traded and with regular public reporting and correlate their performance on key financial indicators (growth in shareholder value, revenue, profit). It also would take a close look and also the rate of “surprises”, or unforeseen problems, in their supply chain that they announce to the markets connected to the growing challenges of water, climate and the disease outbreaks in industrial livestock supply chains.

Sustainability, Transparency and Risk in the Food Industry
The food industry is at the intersection of some of the key risks impacting leading industries: Operational risk from climate and water constraints, reputational risk from poor labor and social conditions in supply chains, and financial risk from increasing volatility of key commodities. Some food companies are showing the strain on their bottom lines as supply chains grow more brittle while others are adopting new approaches that put transparency and corporate responsibility at the center of their strategies, creating vertically integrated “direct to farm” strategies like Mars and Starbucks which are investing in social development programs in key cocoa and coffee growing regions, Chipotle which selects the farmers its distributors and suppliers must work with, and others which are joining industry roundtables set up by global NGO’s like the World Wildlife Fund. While all show concern, this project is intended to determine what leading sustainable food and agriculture sourcing strategies may already be driving business success. The project would involve identifying a substantial universe of large US or global restaurant and consumer-facing food companies, probably publicly traded and with regular public reporting and correlate the types of supply chain transparency and sustainable
sourcing strategies they use, if any, with their performance on key financial indicators (growth in shareholder value, revenue, profit) and also the rate of “surprises”, or unforeseen problems, in their supply chain that they announce to the markets.

Questions:
For each of the above projects, product refers to water, palm oil, and GMOs in the questions below.

How is the product used in the US (and if possible globally) over the past few years, either for export or storage, or for what type of end product?
Where does its used in the US (and if possible globally) come from over the past few years? And how what are the environmental and social conditions in its use or sourcing?
What are the main risks that affect its price and availability?
Which companies, or types of companies, profit or face unexpected costs as a result of its price volatility or key risk events? And to what extent are these also linked to food insecurity and geopolitical instability?

This project is sponsored by Arlin Wasserman, a Founder and Director of the Menus of Change and sponsor of previous Risk Lab projects.
Project: Evaluating Risks and Factors of Success for Entrepreneurial Ventures in Cuba

Background
Private enterprise was expanded by the Cuban government in November 2010 as part of a process of reforms later outlined by the Sixth Party Congress in May of 2011. The reforms were designed to: raise labor productivity, reduce dependence on imports, increase exports, cut state payrolls, address unproductive land and regain lost capital available to industry.

The government authorized approximately 170 categories of self-employment (called Cuentapropismo in Cuba), which have now been expanded to 201 categories ranging from: operating small restaurants and taxis to shoe repair and independent farmers. To date, over 440,000 cuentapropistas operate today throughout Cuba under licenses issued by the government. Proyecto Cuba Emprende is a comprehensive support initiative for entrepreneurs run under the auspices of the Catholic Church of Cuba. Its mission is to provide training and consulting services to Cuban entrepreneurs wishing to start, or improve, their business, to contribute to the development of economic thinking, social progress and to improve the quality of life for Cuban families.

PCE provides entrepreneurial training over 80 hours of in-class instruction over a one-month period. During that time, it encourages graduates to produce detailed business plans before completing the program. Those who successfully complete their business plans (with staff assistance) are invited to be part of a Business Development Center (for ongoing, personalized help in expanding their existing business) or are eligible to be screened for the Business Incubator (for ongoing, personalized help in starting their business). All graduates of the 80-hour training program are invited back for continuing education classes on specific topics (such as branding or applying for bank loans) so that the entrepreneurial “ecosystem” develops with ongoing social and professional interaction.

Since its launch in May of 2012, CE has trained over 800 (through May 2015) entrepreneurs in monthly workshops of approximately 20-25 students (one morning session and one evening session) in both Havana and Camaguey. The three main obstacles faced by PCE graduates include: 1) startup capital, 2) taxes and regulations, 3) access to equipment and inputs. While PCE offers students training, current regulations in Cuba (and the US) prohibit the program from offering graduates financing or capital. While Cuban banks have instituted a program to offer loans to entrepreneurs, most cuentapropistas distrust the government and instead opt to “borrow” from family living abroad (over $2 billion in remittances were sent to Cuba from the U.S. last year).

Following President Obama’s historic December 17, 2015 announcement regarding the normalization of relations with Cuba and his executive action to increase the free flow of people, resources and information to the Cuban people, a window of opportunity to has opened for the half a million independent entrepreneurs in Cuba. New regulations allowing the Cuban entrepreneurs to import goods from and to export their products and services to the U.S. represents an exception to the embargo which allows Cuba’s growing private sector to access the
world’s most important market. While barriers in U.S. legislation have been removed, the practical implementation of this policy of importing goods from Cuban entrepreneurs and exporting input to them now faces the practical challenges of implementation. This project will identify the those barriers and attempt to quantify the benefits to private Cuban entrepreneurs of accessing the U.S. market. By building on work conducted by the Risk Lab team last year, students will model the benefits to select authorized activities of access the U.S. market.

The project is sponsored by Tomas Bilbao, Kellogg EMP alumnus, and Executive Director of the Cuba Study Group.
Block Six Analytics
www.blocksixanalytics.com

Situation
Block Six Analytics (B6A) is a sports marketing and analytics company that provides technology, consulting, and asset valuation service offerings to sports organizations, athletes, and regional sports networks. We also work with agencies and brands that operate in the sports industry. B6A clients include SMG @ Soldier Field, Comcast SportsNet Chicago, and Minnesota United.

B6A has created proprietary new metric called Revenue Above Replacement (RAR). RAR examines a player’s economic contributions to his or her franchise as compared to the minimum performing player that could play the same position. Last fall, B6A used RAR to evaluate the performance of NFL quarterbacks during the 2013 season to see which quarterbacks had added the most value to their teams. After the 2014 season, B6A expanded the analysis to include more revenue streams and more NFL players. B6A then examined how individual players help generate revenue in four revenue streams – ticket sales, television ratings, jersey sales, and sponsorship/other revenue. RAR also addresses how an athlete’s ability to help a team win impacts the organization’s revenue. In addition, RAR calculations were done for non-quarterbacks who have a similar degree of on and off-field impact as quarterbacks.

Task
B6A wants to expand the RAR metric to expand our service offerings, create a new revenue stream, increase brand awareness, and create an in-bound marketing tool.

Action
• Evaluate the RAR metric and recommend any possible enhancements to the model.
  o Determine the current and future on-field and off-field risk factors that could impact an athlete’s value in each revenue stream
• Determine how to apply the RAR metric applies to sports beyond football
  o Find the best sources of data to apply to other sports.
• Explore the best ways to create an inbound web-based marketing platform to present the data to current and potential clients.
• Create a media outreach strategic approach to connect with investors, team, media, agencies, and agents to enhance B6A’s brand awareness and brand perception.
Result
Kellogg students provide B6A with a new service offering that is a significant differentiator in the sports industry. RAR will become not only a product that B6A can monetize through direct sales but also a strategic marketing tool that can help promote the company and our core service offerings. This would allow sports organizations to understand the on-field and off-field risks and rewards associated with players.
Project 1
US Healthcare - Business Model Innovation

US Healthcare Industry is going through massive changes at multiple levels starting with the HIPPA requirements, hospital operations improvement, changing patient demography, financial viability, care quality and, above all, being held accountable for the patient health. This poses many risks and opportunities. There are challenges for the industry on all the fronts - consumers, government, operations and technology. This is creating an opportunity for the businesses to innovate as they make the investments to meet the regulatory needs and reinvent themselves.

Traditional model of a non-profit and regional hospital is being challenged along with questions around the long term viability of the local private practice model. IoT, cloud and big data along with consumer demands for seamless access to personal information is challenging the traditional Information Technology setup.

This project will explore the potential areas of disruption and innovation for the US Healthcare providers. Build a point view on the potential business model and information technology disrupters/innovations that are likely to drive the next generation of Healthcare market - e.g. IoT in Healthcare, applying Big Data to patient information, etc.

Project 2
Next Generation of Consumer Experience in Air Travel

Air travel industry is seeing an increasing global demand with shifts in global economic power, demographics and the accelerating urbanization in emerging economies. While there are traditional challenges for the industry around cost & operations - fuel costs, operations efficiency and skilled labor, there is an emerging opportunity on the revenue side e.g. due to captive consumers "on the day of the journey". Consumer will typically spend 1-2 hour at the airport and 2-10 hours on the plane. Penetration of mobiles and tablets in this segment offers an opportunity for the airlines to differentiate themselves and add to their top line.

This project will explore the possibilities of innovating around consumer engagement and revenue generation during their time at the airport and on the plane. There are number of emerging possibilities with sensor/mobile technologies (tap-in check-in, reservation record pull-up at a self-service kiosk, etc.) and the Wi-Fi on the plane (richer entertainment options, customized servicing of the frequent travelers, partnering with companies to promote products, etc.)