

DECISION LINE

PRESIDENT'S LETTER

What is the DSI Board of Directors Up To?



Marc J. Schniederjans, University of Nebraska-Lincoln

This is my first *Decision Line* newsletter communication as President of DSI. As President I chair the DSI Board of Directors, and we as a Board are committed to advancing every aspect of DSI. As a part of this year's Board's desire for improved transparency, I think you

should know what the Board's objectives are for this year. The Board has four primary objectives:

1. Position the DSI Home Office to provide world-class support to the Institute

To advance this objective the move to the University of Houston has positioned DSI Home Office with up-to-date technology, highly skilled staff and enhanced physical surroundings. In addition, the University of Houston has made available communications technology and other physical facilities that are as advanced as most business organizations possess. Also, the move from Atlanta is mostly complete with little more than the transference of legal residency remaining.

2. Position DSI as a premier organization defining the Decision Sciences discipline

To advance this objective the Board voted during the April meeting to add Business Analytics as a major subject area for development in our *Decision Sciences Journal*. This is a subject area augmenting Supply Chain/Operations Management and Information Systems/Information Technology that is rapidly expanding and for which DSI is uniquely suited to take a leadership role.

See PRESIDENT'S LETTER, page 4

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A MESSAGE FROM THE OUTGOING PRESIDENT

MALING EBRAHIMPOUR, PAST PRESIDENT, University of South Florida St. Petersburg



Maling Ebrahimpour,
University of South
Florida St. Petersburg

This is my last letter to the membership as the outgoing president. My presidency ended on April 1st. I congratulate Marc Schneiderjans the incoming/current President. He has major challenges ahead of him as we continue to make DSI a better organization for all current members and attract new members.

Since this is a joint issue (March – May), it is a unique issue in that it includes a letter from me as outgoing president and a letter from Marc Schneiderjans incoming president who started his presidency on April 1st.

As you all know, due to unexpected circumstances, I started my presidency in June 2013 and ended in April 1st 2014. It seems I have the unique distinction of having the shortest presidency in the history of Decision Sciences Institute. However, during the short period we have accomplished a lot. The board made several long term strategic decisions. Probably one of the most important one was the decision to move the Home Office from Georgia to Texas. Another strategic decision was to continue with the implementation of a sophisticated information system for DSI that should be completed before end of 2014 or early 2015. This new system will finally bring DSI to the 21st century. It has capability to support member activities, national conference, but also provide support for the regional DSI conferences and much more. Another major change that was voted by the membership was changing the DSI Board and the introduction of “division” in DSI.

For the 2014, Johnny Rungtusanathan is putting a great program for our annual conference in Tampa. One of the highlights of the conference is a trip to Dali Museum in Saint Petersburg. The seats are limited and it is based on first come first serve. The cost is \$13 which include bus ride to Saint Petersburg, ticket for the museum, and a light dinner. This event is heavily subsidized by DSI and

by support from the College of Business at the University of South Florida Saint Petersburg. You will not regret your visit to Dali.

Thanks to the strong leadership of our two flagship journal editors both journals are much better positioned to move even higher in various rankings/ratings.

I wish to thank the board who served with me under the most difficult circumstances. They had difficult challenges and did a great job to move the cause of DSI forward. My special thanks to the 2013-2014 board. They were: Powell Robinson who served as Interim Executive Director and Immediate Past President, President-Elect Marc Schneiderjans, Treasurer Manus (Johnny) Rungtusanathan, Secretary Funda Sahin, board members Xenophon Koufteros, Jon (Sean) Jaspersen, Robert Pavur, Rebecca Duray, Merrill Warkentin, Jeet Gupta, Janet Lea Hartley, Gyula Vastag and Stuart Orr.

Overall, serving as the President of DSI was a very rewarding experience while making significant changes that makes DSI much stronger organization in the long term. I like to finish by thanking the membership for giving me the opportunity to serve them.

My tenure as the president was one rewarding in that we saw major progress was made that have profound positive long term effect on our organization. ■

DECISION LINE

DECISION LINE is published five times a year by the Decision Sciences Institute to provide a medium of communication and a forum for expression by its members, and to provide for dialogue among academic and practitioner members in the discipline. For more information about the Institute, please call 404-413-7710.

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Advertising: For information on agency commissions, annual contract discounts, and camera-ready copy, contact the managing editor. Market-place classifieds (job placement listings) are \$60 per 50 words.

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Website: Decision Line feature articles and more information on the Decision Sciences Institute can be found on the DSI website at www.decisionsciences.org.

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DEADLINES: March 2014 issue February 10
May 2014 issue April 10

Vision Statement

The Decision Sciences Institute is dedicated to excellence in fostering and disseminating knowledge pertinent to decision making.

Mission Statement

The Decision Sciences Institute advances the science and practice of decision making. We are an international professional association with an inclusive and cross-disciplinary philosophy. We are guided by the core values of high quality, responsiveness and professional development.

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Maling Ebrahimpour
is Professor of Management at the College of Business at the University of South Florida Saint Petersburg. He is an active researcher and has authored or co-authored over 100 articles that have been published in scientific journals and proceedings. Most of his work focuses on various issues of quality in both service and manufacturing companies. He received his PhD in business administration from the University of Nebraska-Lincoln and has served on the editorial review board of several journals, including Journal of Quality Management, Journal of Operations Management, and International Journal of Production Research.

mebrahimpour@usfsp.edu

Welcome to the combined issue of *Decision Line* (March-May). This is an exceptional issue for *Decision Line* in many ways. First, this is the only issue of *Decision Line* that has two messages from two presidents, one outgoing and one incoming. In addition, due to retirement of the key staff that worked and supported the *Decision Line*, namely, Mr. Hal Jacobs, you may see a different format. Please bear with us as we are trying to make sure we get the issue out. Furthermore, with the new website and new Information System, that may have additional functionality for DL to be published more user friendly.

In this issue in addition to the letters from presidents, you will see interesting articles that you as our membership should be interested to read.

A recent survey that is published

in this issue indicates what cities are preferred by the membership as the future conference locations. It appears that Washington D.C. to be among one of the favorite cities. For details please read the article in this issue titled "DSI Conference Location Survey Report."

In the research article titled "How Decisions Determine The Value of Additional Relevant Information," Authors Sirisomboonsuk and Burns discuss prior to making a decision for any projects, whether or not it is desirable to consider to acquire additional information that might help to reaffirm the decision. They further discuss a method that calculates the value of obtaining additional information and its relationship to its cost.

See EDITOR'S LETTER, page 6

From PRESIDENT'S LETTER, page 1

3. Position DSI as a dynamic, welcoming, responsive, service-oriented organization

Led by our Interim Executive Director, E. Powell Robinson; and our Director Dana Evans, we have a completely new staff of young and enthusiastic employees at the Houston Home Office. Equipped with ample and the latest technology, the Home Office is in a better position to provide quick responses and rapid service to members.

4. Develop and implement strategies to generate membership growth

While it is too early to report on ad hoc committees that have been proposed this year, there are strategies being explored to expand membership. One ad hoc committee seeks to create a college structure that will permit members an attractive (to established and potentially new

members) nucleus of interests focused on narrow subject areas (like information systems) that will permit greater association with colleagues sharing particular research/teaching interests. These colleges, similarly used by other competing organizations, will better afford members the opportunity to participate and network within specialized research/teaching areas. Another ad hoc committee is specifically focused on measures that seek to expand regional membership within the Institute.

While there are many other issues and strategies that the 2014-2015 Board of Directors will be pursuing, we hope we can count on all of the membership to support our initiatives. We are building and seeking to make DSI the best decision making academic institution in the world.

As President-Elect and eventually President, I had the pleasure of attending all five US Regional Board of Director's meetings. I was a bit scared at what I

might find (or what they might do to me), but as it turned out, I had more fun and learned more at those meetings than I have had at many other academic meetings. The one thing that is clear to me is regardless of how we are organizationally structured, with divisions or regions or whatever, the Regions are an essential component to the survival and advancement of the Institute. In turn the Institute needs the cooperation of the Regions on many issues. It is only by working together, asking for help and receiving it that DSI will be a successful organization. It is my belief that the use of regions as a strategy for growth will become more obvious as we continue to expand in our Divisions outside of the US. DSI must make every effort possible to grow membership through regionalization or any other means. We welcome ideas from our membership. ■

POSITION	Assistant or Associate Professor of Marketing or Quantitative Business Methods, with an emphasis in Agribusiness
COLLEGE	Business
TYPE	Tenure-Track; ABD can apply
RESPONSIBILITIES	<ul style="list-style-type: none"> • Teaching lower and upper division courses as well as graduate level courses. • Developing an effective curriculum, benchmarking the best teaching practices of marketing in higher education. • Creating a research track record must be clearly articulated, following Academically Qualified expectations as outlined by the AACSB. A track record of published research is critical, especially for those candidates seeking a position as associate professor. • Demonstrating capability in engaging student learning in an outcomes-based education environment. • Engaging with marketing community and other stakeholders; a professional network is critical. • Participating actively, exercising collaborative peer leadership, in college and university committees. • Willingness to mentor students, and enable their career goals through introduction and referrals to marketing firms (e.g., communications, advertising, public relations, etc.) and departments within companies. • Teaching 12 credits (usually three courses) per semester; this is a typical faculty load.
QUALIFICATIONS (MINIMUM)	<ul style="list-style-type: none"> • Ph.D. in marketing or quantitative business methods with an agribusiness emphasis, by the time of appointment, from a regional and/or AACSB accredited doctoral program. • Passionate about teaching preferably evidenced by good student evaluations; must be able to demonstrate teaching capabilities. • Interpersonal skills and ability to collaborate with colleagues is essential. • Ability to teach effectively in a wide range of courses, mostly in marketing and/or quantitative business methods with additional teaching in Agribusiness. • Experience working effectively in an ethnically and culturally diverse campus community.
QUALIFICATIONS (DESIRABLE)	<ul style="list-style-type: none"> • Since CSUMB's business community is composed of agriculture, hospitality, and small businesses, knowledge and experience with these stakeholders are preferred. • Work experience in business related to discipline is preferred. • Demonstrated leadership skills in professional or academic areas are desirable.
BACKGROUND CHECK	As part of the employment process, California State University, Monterey Bay verifies statements made regarding employment history, academic credential/degree completion, and conducts a criminal history check.
JOB POSTING DATE	6/15/14
SCREENING BEGINS	10/15/14
APPOINTMENT DATE	Fall 2015
APPLY	All prospective applicants must apply on-line at https://mocha.csUMB.edu/uhr/jobs/login_applicant.jsp
SALARY	http://ap.csUMB.edu/site/x15467.xml
BENEFITS	http://www.calstate.edu/Benefits/Summaries/2007_Faculty-Unit%203.pdf
CAMPUS HOUSING	http://csUMB.org/cehi/
VISION STATEMENT	http://csUMB.edu/site/x11547.xml
ABOUT CSUMB	http://catalog.csUMB.edu/introduction/csUMB-overview
Apply Here: http://www.Click2Apply.net/vzy8htns	

Carol J. Latta Memorial DSI Emerging Leadership Award for Outstanding Early Career Scholar

To be awarded annually at the Decision Sciences Institute (DSI) annual meeting (each November) to one early career scholar in the Decision Sciences who has served the Institute and its goals.

The recipient will receive a plaque and a token financial award to be funded by DSI and its Carol J. Latta Memorial Fund (donations welcome to honor Carol).

To be eligible for consideration of this award you must be nominated by a faculty or an administrator. Nominators must submit a nomination letter detailing why the nominator is recommending candidate along with the candidate's curriculum vita by October 3, 2014 to the DSI home office. Materials are to be addressed to Dr. Maling Ebrahimpour (selection committee chair) and submitted electronically to:

DSI@bauer.uh.edu
Subject: Carol Latta Memorial Award

The selection committee chair is composed of the immediate past President of DSI plus the VP of Member Services, the VP of Professional Development, VP for Global Activities, and the recipient of the previous year's award.

Criteria for Award

This award shall go to a scholar in the decision sciences disciplines who has earned his or her terminal degree (e.g. PhD, DBA, etc.) in the previous five (5) years. Evidence of excellence in research, teaching, and service to DSI may be provided as an appendix to the letter of application (limited to five pages). Such

evidence may include documentation regarding Institute-related professional service (DSI committees, reviewing, session chair, track chair, etc.), teaching evidence (teaching award, new course development, etc.), and Decision Sciences related scholarly research (publications in Decision Sciences, Decision Sciences Journal of Innovative Education, and other highly-regarded journals in the decision sciences disciplines and presenting at DSI meetings). The awardee must be a member of the Institute in good standing.

These criteria will be reviewed annually by the Awards committee, and recommendations will be provided to the board for revisions to these criteria. ■

From EDITOR'S LETTER, page 4

Professor Jan Stentoft ArlbjØrn conducts an interview with Professor Antony Paulraj explore what it takes to build a research career in Denmark. I encourage you to read this interesting article. Furthermore, there are news about various conferences and announcement about the Annual Conference in Tampa. In addition, there IS an announcement about Carol J. Latta Memorial DSI Emerging Leadership Award for Outstanding Early Career Scholar. If you know an early Career individual please encourage them to apply. Please read the announcement, which provides more important details.

I encourage you, our reader, to share your opinions, ideas with us by writing and sending it to me at mebrahimpour@usfsp.edu.

I am looking forward to reading your articles for inclusion in Decision Line.

Maling Ebrahimpour, PhD

Editor ■

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Assistant/Associate Professor Decision Sciences Craig School of Business

An earned doctorate (Ph.D. or DBA) in Business Administration, Decision Sciences, Statistics, Management Science or related field from an AACSB or ABET accredited institution or the equivalent is preferred. Candidates nearing completion of the doctorate (ABD) may be considered; however, for continued employment, the doctorate must be completed by 7/30/2015. Appointment to the rank of Associate Professor requires a consistent and sustained record in both (a) university teaching experience and (b) scholarly publication and research appropriate to the rank.

To ensure full consideration, apply by 10/1/14. For more information and to apply, visit <http://apptrkr.com/482226> Open Until Filled.

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Thomas E. Lang
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For more than 50 years, U.S. deterrent strategy was based on assured destruction, informing potential adversaries that it had overwhelming nuclear capabilities and that it could assure the destruction of state actors should they launch a first strike against the United States. The intent of the strategy was to assure deterrence by making the thought of a first strike inconceivable. [1] This nuclear deterrent strategy was accompanied by the creation of a large standing conventional force that could be employed to win large scale conventional wars. Other contingencies were deemed to be a lower intensity version of the major theater war scenarios. This strategy resulted in the development of large “standing capabilities” that could be augmented quickly by reserve components.

Over the last 15 to 20 years, the focus has shifted to the post-Cold War paradigm of building capabilities in order to avoid a nuclear war by preparing for nonrecurring major regional conflicts. The threat facing U.S. interests is now different, and so are the necessary deterrent capabilities. As it did in the past, nuclear deterrence continues to be vital against possible state actors, but a different conventional deterrent strategy is essential for the foreseeable future. While still preparing to engage and prevail in major theater wars, the U.S. is shifting its attention to a continuous and rapid projection of forces in ongoing and successive deployments,

Modeling Reliable Options for Overseas Combat Support Basing

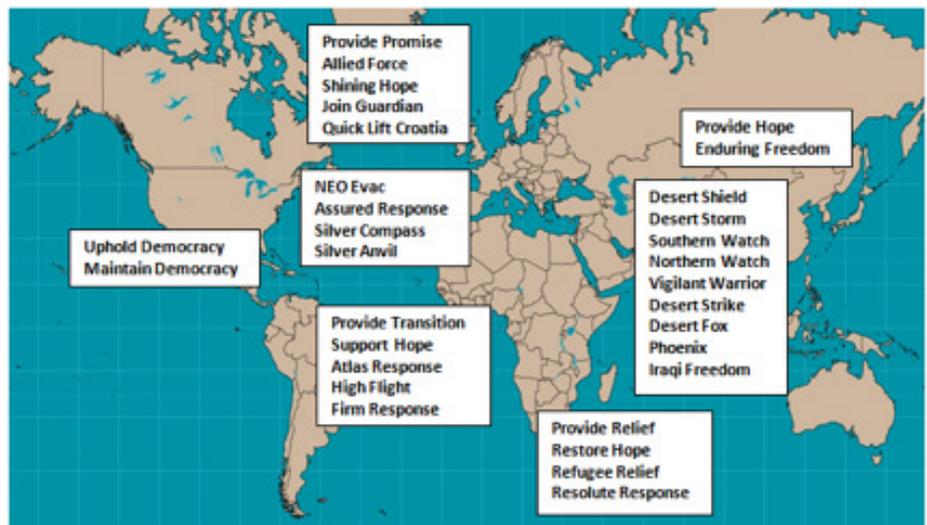
by Thomas E. Lang, Pardee RAND

engagements, and reconstitutions in order to deter aggression and coercion from state and non-state actors throughout the world. This concept has the dual objectives of promoting stability and demonstrating that the U.S. can project power and destroy or diminish the capability of terrorist groups or state actors should they threaten U.S. or allied interests in the region. The rapid and recurring global force projection capability is needed to deter aggression, and if that fails, to take quick action to defeat state and non-state actors. [2]

The United States has established and maintained a large number of overseas military bases, presently numbering more than 700 locations around the globe. This massive presence has enabled the U.S. military to operate in every part of the world and respond to crises quickly. It is important to note

that the end of the Cold War did not reduce the burden on U.S. forces. In fact, in the last decade of the twentieth century the U.S. carried a significant portion of the security and peacekeeping responsibilities around the globe. The Air Force has been called upon to make numerous overseas deployments, many on short notice—using downsized Cold War legacy force and support structures—to meet a wide range of mission requirements associated with peacekeeping and humanitarian relief, while maintaining the capability to engage in major combat operations such as those associated with operations over Iraq, Serbia, and Afghanistan. A recurring challenge facing the post-Cold War Air Force has been its increasing frequency of deployments to increasingly austere locations. Figure 1 illustrates the geographic diversity of some of these

Figure 1. Sample of U.S. Operations and Exercises Since 1990



Source: Amouzegar et al., 2006.

deployments.

Based on the unpredictability of the nature and location of recent conflicts, it is growing more apparent that U.S. defense policymakers can no longer just plan for one particular deployment in a specific region of the world, as the geopolitical divide of the last century has been replaced with a security environment that is more volatile.

Although the past conflicts and engagements may not be repeated in the same manner in the future, we can leverage our understanding of those events to help shape our planning for the future. Moreover, focus can be placed on the characteristics of the past events to create a broad set of alternative potential future environments.

Air Force Combat Support Network

The overall policy question being addressed is: How should the United States Air Force structure and locate war reserve materiel (WRM) in order to cover a broad set of potential missions around the globe?

To begin with a simple overview, the Air Force performs a large number of missions throughout the world each year. To support these missions, the Air Force prepositions supplies at various locations around the globe. Decisions need to be made on where to locate the supplies and how to allocate supplies across sites. Optimization models can be developed to assist policy makers with these decisions. In its simplest form, the combat support network is a series of demand nodes (locations from which forward-deployed forces operate), supply nodes (locations from which support resources are located and sent to the demand nodes), and the network routes connecting the two sets of locations. This section will briefly explain four elements of the combat support network.

WRM is the equipment and supplies needed to support forward-deployed units. The materiel is

prepositioned in order to reduce reaction time and to sustain forces. This research focuses on Basic Expeditionary Airfield Resources (BEAR), munitions, and rolling stocks (e.g. trucks) because they comprise the bulk of the items in the WRM package. BEAR items consist of housekeeping and industrial operations required for an austere or semi-austere airfield to reach operational capability.

Forward Operating Locations (FOLs) are the demand nodes in the network. These are locations forward-deployed, out of which tactical forces operate. FOLs can have differing levels of demands for combat support resources to support a variety of employment timelines.

Forward Support Locations (FSLs) are the supply nodes in the network. These are sites near or within the theater of operation for storage of heavy combat support resources, such as

munitions or war reserve materiel. The sites are also used for consolidated maintenance and other support activities. The configuration and specific functions of FSLs depend on their geographic location, the threat level, steady state and potential wartime requirements, and the costs and benefits associated with using these facilities. Some FOLs might be collocated with FSLs if extremely rapid response is necessary.

A Transportation Network connects the FOLs and FSLs with each other, including locations providing en route tanker support. This is an essential part of the combat support network in which FSLs need assured transportation links to support expeditionary forces. [3] [4]

Network Mapping

The elements of the combat support

Table 1. Network Mapping

Location-Allocation-Flow Problem Categories	Combat Support Network Element
What is Being Shipped	WRM including BEAR, munitions, and rolling stocks
Demand Nodes	FOLs
Supply Nodes	FSLs
Transportation Modes	Three classes of vehicles are considered: air, ground, and sea
Costs	Facility construction, Facility operations and maintenance, Transportation, Commodity procurement, and Commodity reallocation
Time	Commodities are required to move from FSLs to FOLs within two time limits (i.e., 10 and 30 days). Time elements are also used when designing demand scenarios and vehicle constraints (e.g. loading and unloading, traveling from one location to another, etc.)
Objective Function	Minimize the costs of conducting training and deterrent exercises over a given time horizon
Recourse	Some decisions are less permanent than others meaning that changes can be made with a relatively short notice. A differentiation is made between recourse and non-recourse decisions.

network can be mapped to the different categories of the classic location-allocation-flow problem. Table 1 illustrates the mapping. The remainder of this article lays out the different modeling approaches that were developed.

MULTIPLE POSTURE MODEL

Initially, a “naïve” approach to reliability modeling is taken. The model assumes that the policy maker knows in advance which facility access would be lost to, and can make decisions to fortify the network against this loss. The first step is to create an optimization model, the non-reliable optimization model (NRM), that identifies a set of overseas basing locations and allocates commodities across those locations, assuming that all of the facilities are available (zero probability of node failure). Once the location and allocation of commodities has been identified, the next step is to march through sequentially, and remove each location one by one from the solution set, to identify the different costs associated with each node failure. This model is used to identify a baseline case to compare the solutions of other model variations against; and also, to show why the more advanced modeling

techniques developed are needed. [5]

In building a reliable combat support network, there are four options for policy makers to consider:

- **Placing** additional inventory at existing FSLs;
- **Opening** additional FSLs; or,
- **Using** a combination of opening additional FSLs and placing additional inventory at existing FSLs; and,
- **Greater** dispersion of commodity allocations across FSLs.

Summary of Model Runs

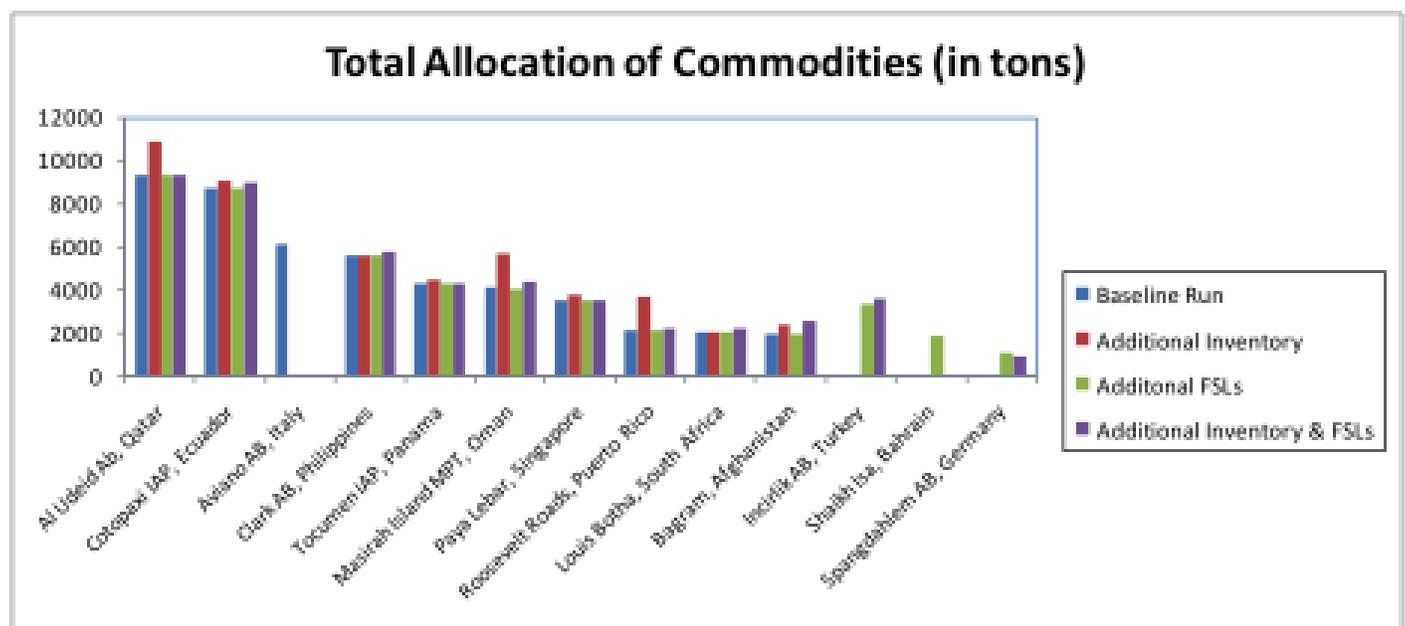
An optimization model was developed that does not account for the potential loss of access to FSLs, the NRM. The performance of the NRM was evaluated by removing single FSLs from the solution, in order to get a better understanding of how the network operated. For each loss-of-access scenario, alternative postures were identified that could meet the demand requirements when a particular FSL failed. The difficulty with trying to identify a reliable network using this model is that policy

makers would have to know in advance which facility location access would be lost, something that is highly unlikely.

The solutions returned from this iterative NRM approach used a combination of policy options in order to satisfy demand when access to any one individual facility, along with the commodities located there, were lost. In some cases, when restrictions were placed on which policy options were available (i.e., opening additional facilities and procuring additional inventory at existing sites), the model returned infeasible solutions; meaning, the model was not able to satisfy demand and all other constraints with the policy options that were available. When the model was free to choose between all policy options, the model chose to use a combination of opening additional facilities and procuring additional commodities at existing facilities; which options were used depended on which facility access was lost to. The NRM opened ten FSLs at a total cost \$74 million for the baseline run. For the subsequent loss-of-access runs, the total costs of the alternative postures ranged from \$96 million to \$247 million.

Two issues emerge from the results

Figure 2. Total Allocation of Commodities for the NRM



of these modeling runs. First, several large facilities existed in the solution set (meaning they possess a relatively larger amount of commodity allocation than other facilities). This places a stress on the system if access is lost to these particular facilities and the associated commodities allocated there (see Figure 2). Second, the model returned multiple postures, meaning that if a policy maker knows in advance to which facility access will be lost, they can choose from the portfolio of results. However, since knowledge of node failure is most likely not known in advance, if any one individual facility were to fail in the network, the remaining network would not necessarily be able to satisfy demand and meet all other constraints with the components which remain in the network.

SINGLE NODE FAILURE RELIABILITY MODEL

The multiple posture model, NRM, assumes that the policy maker knows in advance which node access would be lost to, and can make decisions to fortify the network against this loss. In reality, the sequencing is reversed and the policy maker needs the ability to design a network which satisfies demand, regardless of which facility access is lost too. The single node failure reliability model (RM) accomplishes this task. Where the previous model returned multiple solutions, with a different posture for each loss-of-access scenario, this model returns a single reliable posture. The research shows that the solution returned from the model ensures that if any one node is removed from the solution set, demand is satisfied and all constraints are satisfied.

Summary of Model Runs

In order to address the two issues that emerged from the NRM, the RM was developed. A series of demand constraints were introduced to ensure that demand is met if access is lost, along

Figure 3. Total Allocation of Commodities for the RM

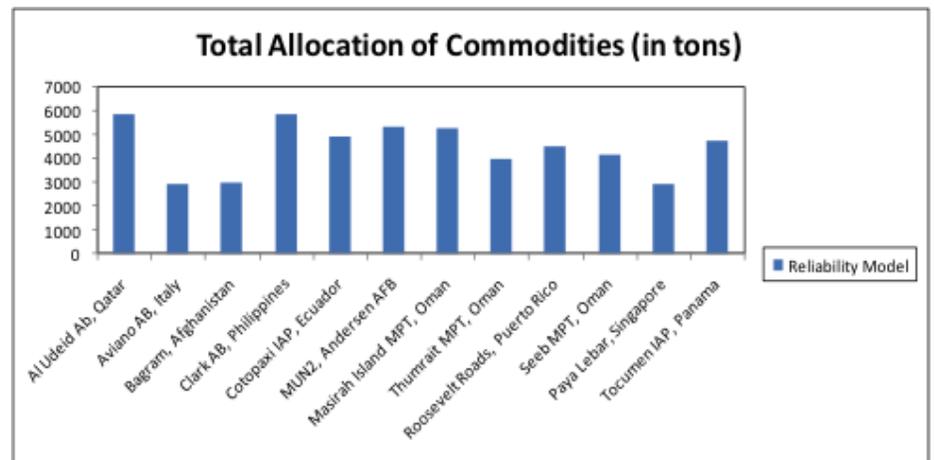
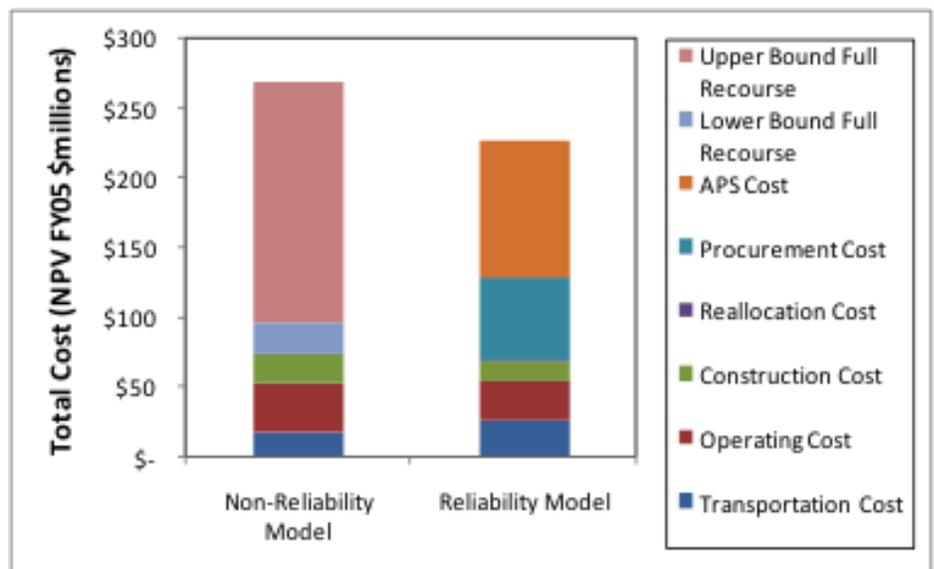


Figure 4. Cost Comparison Between NRM and RM



with the allocated commodities, at any one individual FSL. The model returns a reliable solution that is a single posture which will satisfy demand in the event of loss of access to any FSL.

Some interesting policy insights emerged from the results of the RM. First, the model opened twelve FSLs compared to the ten opened from the baseline run of the NRM. While the NRM opened FSLs in Africa, the RM solution did not utilize any African FSLs. The RM instead chose to support most demand from African FOLs from FSLs located in the Middle East. This emphasizes the strategic importance of locations in the Middle East

beyond just supplying commodities to locations in the Middle East itself and also emphasizes the global view of a combat support network as compared to a theatre view.

Second, the model chose to increase the amount of overall commodities in the system in an amount equal to the largest allocation of commodities for any one individual FSL. This ensures that if the access is lost to the largest facility, there are enough additional commodities in the system to satisfy demand, without the need for any procurement of commodities beyond what exists in the system.

Third, unlike the results of the

NRM, the RM chose to disperse commodities more evenly across the opened FSLs. No individual FSL has a relatively larger share of commodities than the other FSLs in the network (see Figure 3). From a policy standpoint, based solely on commodity allocation, no individual facility is relatively much more important than the other facilities. Total costs increased from \$74 million for the NRM with no loss of access to \$96 to \$247 million for the subsequent loss-of-access runs. The RM returned a total cost value of \$226 million (see Figure 4).

MULTIPLE NODE FAILURE RELIABILITY MODEL

The RM returned a single reliable posture which satisfied all constraints even when access was lost to any individual node within the posture. Due to the large amount of computing power needed, it is difficult to use the model to examine the case of simultaneous loss of access to multiple nodes. To overcome this problem, this research constructs an alternative version of the single node failure reliability model which is then expanded to the multiple node failure reliability model (MNFRM), which takes considerably less computing power to solve and therefore, can be expanded to consider simultaneous loss of access to multiple facilities.

Summary of Model Runs

Due to the amount of computer memory required to solve the RM when only considering one facility failure, the RM could not be used to examine cases of multiple facility failures. To address this issue, some modifications were made to the RM which decreased the size of the problem and therefore, the amount of computing power needed to solve multiple facility failure problems.

Starting with the NRM, constraints were added and a few minor modifications were made to existing constraints and the objective function. After a bit

of a trial and error process, a model was found that returns a network which will satisfy demand and meet all other constraints when access is lost to a single facility in the network, with just the remaining network facilities and the commodities allocated to each of them. The research demonstrated how this model can be expanded to account for simultaneous multiple facility failures.

As with the RM, some interesting policy insights emerged from the results of the model runs. The model opened a larger number of FSLs than either the NRM or the RM, and overall costs were slightly higher. However, the increases were not substantial in either case and when we take into account the size of the model in terms of computing power, compared to the RM the MNFRM model is an attractive alternative modeling method.

Similar to the RM, from a policy standpoint, when only considering commodity allocation, no individual facility is relatively much more important than the other facilities in the network. Total relative costs increased from \$226 million for the RM to \$278 million for the MNFRM.

When demonstrating how the model can be expanded to consider simultaneous multiple facility failures, the MNFRM increased the amount of overall commodities in the system by an amount equal to the total sum of the maximum amount of each type of commodity that each FOL receives from any two FSLs and again dispersed the commodities fairly evenly across the opened FSLs. The results showed that for only a slightly higher cost, we move from a network reliable against a single facility failure, to a network which is reliable against two simultaneous facility failures.

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How Decisions Determine the Value of Additional Relevant Information

by Pinyarat Sirisomboonsuk, Texas Tech University;
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ABSTRACT

In this paper we discuss the issue of whether to pursue additional relevant information before proceeding with the primary decision. A primary decision might consist of whether to proceed with a certain therapy, whether to test a particular hypothesis, whether to introduce a new product, whether to undertake a new project, whether to drill for oil at a certain location, whether to continue testing a particular product, etc. Prior to making such a decision, it is desirable to consider the quest of additional information that would help to confirm or deny the decision choice. In this paper, we illustrate a method for calculating the value of obtaining the additional information, taken in relation to the cost. Clearly, if the value exceeds the cost, the additional information should be pursued and that information used to determine the correct primary decision choice. We present, in this paper a methodology for calculating the value of the additional information in the context of the specific primary decision. The strategy involves Bayesian revision, utilizing probability trees. Using this paradigm, a spreadsheet prototype was created that would enable 'what if' experiments to be conducted rapidly. From this prototype certain generalities are ascertained.

mary decision. Potentially, the additional information can help the decision maker choose the best alternative relative to the primary decision. In such situations the decision maker must decide first whether to put money into the purchase or acquisition of the additional information before making the primary decision. The primary decision could be whether or not to launch a new product or service, whether or not to launch a particular project, or which of a variety of projects to choose, whether to take on a project as project manager, which person to assign as project manager to a project, etc.

CALCULATION OF THE VALUE OF ADDITIONAL INFORMATION

In this section, we illustrate how to make sequential decisions in which the decision maker must first decide whether the additional information is worth the cost, and then what to do relative to the primary decision. The additional information is always less than perfect, and for that reason, is called sample information. While an EVPI (Expected Value of Perfect Information) calculation would certainly give us an upper bound on the worth of the imperfect information, we would like a tighter bound on the information's actual worth, that is more indicative of the maximum amount the decision maker should pay for the information. We shall call this the EVSI, or Expected Value of Sample Information. The EVSI is always less than the EVPI, because the EVPI assumes perfect information, whereas the EVSI assumes sample (imperfect) infor-



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INTRODUCTION

Frequently, it is possible for decision makers to avail themselves of additional information before making the final pri-

mation. The information usually comes with conditional probabilities that show the “forecasting ability” of the information. This information can be had by recourse to a consultant, by taking surveys, by conducting tests of various and sundry types, all of which cost money.

The conditional probabilities that come with the information have to be used to revise the state probabilities regarding the likelihood of the various future states. Let’s suppose that the additional information gives one of two predictive outcomes, SUCCESS or FAILURE. Then for each of these predictive outcomes, we must calculate revised future state probabilities and use these to determine our best choice, assuming the additional information we received was SUCCESS or was FAILURE. These revised state probabilities must be calculated using Bayesian revision. We illustrate how to do that with probability trees. Finally, we will use payoff tables to “map-out” the decision sequence and to determine the best decision strategy.

Consider the following scenario. A project manager wishes to assess the level of risk associated with a project that is being contemplated. Based on the firm’s experience with projects of this sort, there is a 20% chance of success resulting in a gain of three million dollars over five years. On the other hand, there is an 80% chance of failure resulting in a loss of one million dollars over the same period. In this latter case, one million gets spent on the project before it is discovered that the requirements are wrong and the project must be scrapped (terminated). For \$50,000, the firm can hire an outside consultant who will assess the likelihood for success. Based on past experience with projects of this type, the consultant predicted success when the project was successful 75% of the time. The consultant predicted failure for projects that were duds 87.5% of the time. To arrive at these conditional probabilities, the consultant is presented with a number of old project proposals in which the actual future states are known but not revealed to the

consultant. The consultant is allowed to read material (the proposals) related to the project and then to make a “prediction.” This prediction is then recorded in relation to whether the project was an actual success or failure. The project numbers, the actual states associated with these projects and the consultant’s ‘prediction’ are given in Table 1.

From Table 1, it is apparent that out of 20 projects, 16 were failures and four were successes. Thus, the prior probability of success is .2, while the prior probability of failure is $1-.2 = .8$. The consultant correctly predicted SUCCESS, given that the project was a success in actuality three out of four times (see projects 1, 7, 11, and 16). Thus, the conditional probability of a SUCCESS prediction given a successful project is .75. The consultant correctly predicted FAILURE, given that the project was a failure in actuality, 14 out of 16 times. Thus, the conditional probability of a FAILURE prediction given a failed project was $14/16$ or .875. It is also apparent that the conditional probability of a prediction of FAILURE given a successful project was .25, while the conditional probability of a prediction of SUCCESS given a failed project was $2/16$ or .125. If we use the following

acrostics, PS, PF, AS, AF for predicted SUCCESS, predicted FAILURE, actual success and actual failure, respectively, then $P(PS|AS) = .75$, $P(PF|AS) = .25$, $P(PS|AF) = .125$ and $P(PF|AF) = .875$.

Clearly, the decision maker must first decide whether to buy the additional information and then must decide upon the primary question of whether to do the project or not based on that additional information. As can be determined from Table 1 above, the probabilities of success and failure associated with the primary decision are $4/20$ or .2 for $P(AS)$ or $P(\text{actual success})$ and $16/20$ or .8 for $P(AF)$ or $P(\text{actual failure})$ while the payoffs associated with success and failure are known to be \$3,000,000 and -\$1,000,000. This information is shown in Table 2.

As in the previous problem, we can calculate an expected value for doing the project by averaging out as follows: $.2*(3,000,000) + .8*(-1,000,000)$. This yields a value of -\$200,000. Furthermore, the expected value of doing nothing is $.2*(0) + .8*(0)$ or 0. Obviously, our choice would be to do nothing, since, on average, we can expect to lose \$200,000 every time we do projects of this type. We can also calculate an EPPI (Expected Payoff

Table 1: Past cases in which a project has been undertaken together with the actual state and the consultant’s prediction (in caps)

Project Number	Actual State	Consultant’s Prediction	Project Number	Actual State	Consultant’s Prediction
1	Success	SUCCESS	11	Success	SUCCESS
2	Failure	FAILURE	12	Failure	FAILURE
3	Failure	FAILURE	13	Failure	FAILURE
4	Failure	SUCCESS	14	Failure	FAILURE
5	Failure	FAILURE	15	Failure	FAILURE
6	Failure	FAILURE	16	Success	FAILURE
7	Success	SUCCESS	17	Failure	FAILURE
8	Failure	FAILURE	18	Failure	FAILURE
9	Failure	FAILURE	19	Failure	FAILURE
10	Failure	SUCCESS	20	Failure	FAILURE

Table 2: Payoff table involving choice of one of two decision alternatives, together with associated state probabilities

Payoff Table	Success	Failure
Probabilities	.2	.8
Do project	\$3,000,000	-\$1,000,000
Don’t do project	0	0

of Perfect Information) and an EVPI (Expected Value of Perfect Information). Notice that our optimal alternative for this problem is “Don’t do project” and that this results in an EV* of 0. So for this problem, EVPI is simply going to be equal to EPPI, as the formula for the EVPI is $EVPI = EPPI - EV^*$. The EPPI for this problem is simply the product of the probabilities in each column times the highest payoff in that column, or $.2*(3,000,000) + .8*(0)$, summing the resulting products. The result is \$600,000. Thus, the $EPPI = EVPI = \$600,000$ and this is the maximum we would be willing to pay for perfect information; naturally, we would be willing to pay even less for imperfect information. We can represent all of this in Table 3.

Now, let’s consider the additional information. Two outcomes are forthcoming from the consultant. Either she forecasts the project will be a SUCCESS or she forecasts the project will be a FAILURE. We don’t know what the predictive probabilities of these two outcomes are. Neither do we know what the probabilities of an actual success given a forecasted SUCCESS are. In fact, we would like to know the following “revised” probabilities: $P(AS|PS)$, $P(AF|PS)$, $P(AS|PF)$ and $P(AF|PF)$. That is, we would like to know the probability of an actual success, AS, given the prediction of PS, a prediction of success, which we represent with $P(AS|PS)$. Likewise, we would like to know the probability of an actual failure, AF, given a prediction of failure, PF. We represent this information with $P(AF|PF)$. Recall that $P(AF|PS) = 1 - P(AS|PS)$ and that the $P(AS|PF) = 1 - P(AF|PF)$. Notice that these are very different from the conditional probabilities that were calculated based on the consultant’s reaction to twenty old cases. These are revised probabilities because they reflect what the actual state probabilities are, conditioned upon the new information coming from the consultant. The original state probabilities were $P(AS)$ and $P(AF)$. Clearly, if the consultant predicts SUCCESS, then $P(AS|PS)$

Table 3: Payoff table involving choice of one of two decision alternatives, using the expected value criterion

Payoff Table	Success	Failure	Expected Value (EV)
Probabilities:	.2	.8	
Do Project	\$3,000,000	-\$1,000,000	-\$200,000
Don’t do project	0	0	0 ← EV*
Column Maxima	\$3,000,000	0	\$600,000 = EPPI

and $P(AF|PS)$ would revise these actual state probabilities to some other values. At this point we know $P(PS|AS)$, $P(PS|AF)$, $P(PF|AS)$ and $P(PF|AF)$ to be .75, .125, .25 and .875, respectively, based on the data in Table 1. But to solve this decision problem we need $P(AS|PS)$, $P(AF|PS)$, $P(AS|PF)$ and $P(AF|PF)$. To get these latter conditional probabilities will require use of Bayes’ theorem. Thus, the solution requires that we perform Bayesian revision. Bayesian revision is discussed in most text books on statistics (Westfall and Henning, 2013) and nearly all texts in management science.

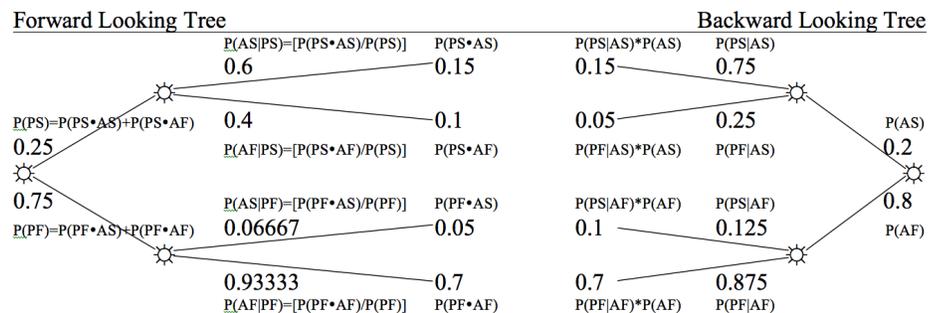
Bayesian Revision

In this section, we illustrate an easy to remember strategy for doing Bayesian revision, involving probability trees. We construct first a backward looking probability tree in which we emanate from a single node, the actual states of nature. From the resulting endpoints we further emanate the predicted outcomes, as shown in Figure 1. The backward looking probability tree is like standing in the future and looking backward toward the present. First the actual states are encountered and then the predictive states. Notice how each edge is labeled

with a name and its associated probability. We then calculate the probabilities of the very-most end nodes of this tree. These are the joint probabilities associated with an actual state, prediction (outcome) pair. Thus the joint probability $P(PS \bullet AS) = P(PS|AS)*P(AS)$. Similarly, for the other joint probabilities; that is, $P(PF \bullet AS) = P(PF|AS)*P(AS)$, $P(PS \bullet AF) = P(PS|AF)*P(AF)$, and $P(PF \bullet AF) = P(PF|AF)*P(AF)$. These calculate out to be .15, .05, .1 and .7, respectively. The joint probabilities associated with each end-node can be obtained simply by multiplying the probabilities leading from the root-node out to the end-node as illustrated in Figure 1.

To solve the forward looking tree, we assume we are standing in the present and looking toward the future. In sequence, we expect to first receive the consultant’s predictive outcome (SUCCESS or FAILURE) and then we will be recipients of the actual state, either success or failure. From the root node, we emanate the two predictive outcomes SUCCESS and FAILURE, and from these we emanate the actual states, success and failure. We move the joint probabilities from the backward looking tree over to the forward looking tree and then we are able to calculate the probabilities of

Figure 1: Probability Trees for Bayesian Revision



the two predictive outcomes P(PS) and P(PF), as follows. $P(PS) = P(PS \bullet AS) + P(PS \bullet AF) = .15 + .1 = .25$ and $P(PF) = P(PF \bullet AS) + P(PF \bullet AF) = .05 + .7 = .75$. We can now calculate the required conditional probabilities: $P(AS | PS)$, $P(AF | PS)$, $P(AS | PF)$ and $P(AF | PF)$. However, from our basic understanding of probability theory, $P(AS | PS) = P(PS \bullet AS) / P(PS) = .15 / .25 = .6$. Similarly, $P(AF | PS) = P(PS \bullet AF) / P(PS) = .1 / .25 = .4$. Given a prediction of FAILURE, PF, we can also calculate $P(AS | PF) = P(PF \bullet AS) / P(PF) = .05 / .75 = .06667$. Similarly, $P(AF | PF) = P(PF \bullet AF) / P(PF) = .7 / .75 = .93333$.

From the Bayesian revision, we learn that the probability of an actual success, given the consultant predicts SUCCESS for the project, is .6 and that the probability that the project will be a failure, given that the consultant predicts SUCCESS is .4. We can now apply these revised probabilities in our payoff table and calculate expected value for the two alternatives in Table 4.

Clearly, in this case where the consultant predicted a SUCCESS we would do the project. Similarly, we consider the case in which the consultant predicts FAILURE. The probability of an actual success, given the consultant predicts FAILURE for the project, is .06667, while the probability that the project is a failure,

given the consultant predicts FAILURE for the project, is .93333. We can now apply these revised probabilities in our payoff table and calculate the expected value for the two alternatives in Table 5. Evidently, our choice in this case would be to not do the project. We now have a simple strategy, do the project when the consultant predicts SUCCESS and don't do the project when the consultant predicts FAILURE. Since, the probabilities of predicting SUCCESS and FAILURE are .25 and .75, respectively, we can calculate the expected value of this strategy. It is $.25 * (\$1,400,000) + .75 * (0)$ which is \$350,000. We can now address the question of how much this imperfect information is worth in actuality. The Expected Payoff of Sample Information, EPSI, in this case is clearly \$350,000. Recall that the expected value, EV^* , without the sample information was 0. The $EVSI = EPSI - EV^*$, which is $\$350,000 - 0$ or \$350,000. Thus, this information has a value to the decision maker of \$350,000, which is less than the calculated value of perfect information. Perfect information, or the $EVPI$, was worth \$600,000. In any case the decision maker should consider this information a good deal at \$50,000, should go ahead and buy it and then do what the consultant says. If the consultant predicts SUCCESS, do the project;

otherwise, not. The net expected return would be $\$350,000 - \$50,000$ or \$300,000, for projects of this type.

PROCEDURE SUMMARY

The procedure for completing this analysis is the following, where it is assumed that the user should first collect the data shown in Table 1.

1. Form the decision table like that shown in Table 2 and solve this table without additional information.
2. From a table like Table 1, compute initial probabilities— $P(S)$, $P(F)$, $P(PS | AS)$, $P(PF | AS)$, $P(PS | AF)$, $P(PF | AF)$ and do Bayesian Revision
3. Find solution (Table 4) assuming consultant predicts SUCCESS
4. Find solution (Table 5) assuming consultant predicts FAILURE
5. Using the selected alternative in Steps 4 and 5, calculate the EPSI and the EVSI. If the EVSI exceeds the cost of the additional project, collect the additional information. Use that additional information to make a more informed primary decision.

IMPLEMENTATION USING MS EXCEL

The implementation is created in MS Excel and serves to provide a quick tool on which "What if" experiments can be conducted. For example, in the illustration above, how many proposals must the consultant have wrongly determined the outcome in order for her information to be worth less than her asking price? If the consultant's predicted outcomes are perfect, is the EVSI then equal to the EVPI? Many other "What if" questions are possible. Figure 2 is the schematic.

Learning from Performing "What If"

With this spreadsheet implementation, users can perform "What If" experiments. For example, if the consultant

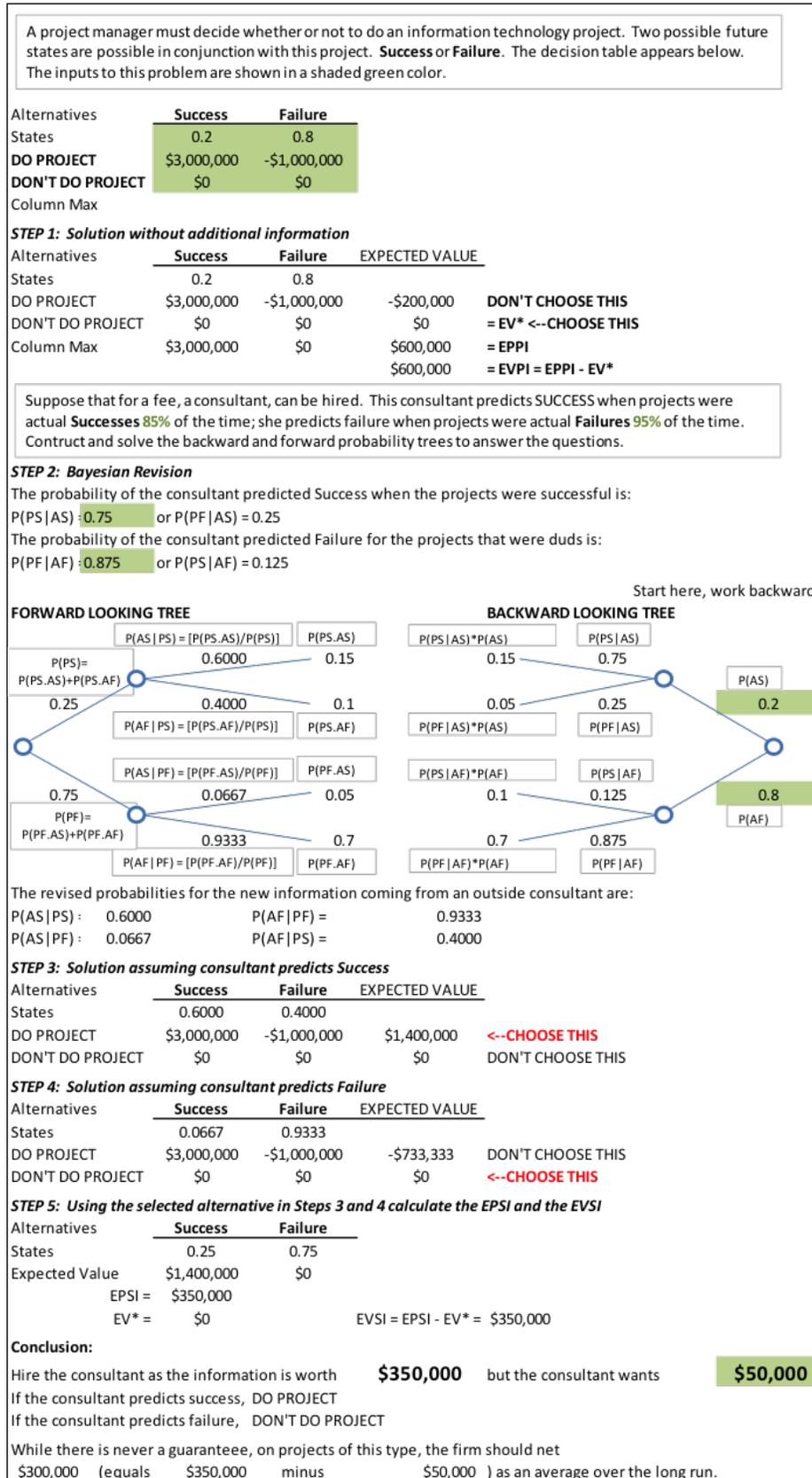
Table 4: Payoff table involving choice of one of two decision alternatives, using the expected value criterion and revised probabilities based on the consultant's prediction of success

Payoff Table assuming consultant predicts SUCCESS	Actual Success	Actual Failure	Expected Value (EV)
Revised Probabilities	.6	.4	
Do Project	\$3,000,000	-\$1,000,000	\$1,400,000
Don't do project	0	0	0

Table 5: Payoff table involving choice of one of two decision alternatives, using the expected value criterion and revised probabilities based on the consultant's prediction of failure

Payoff Table assuming consultant predicts FAILURE	Actual Success	Actual Failure	Expected Value (EV)
Revised Probabilities	.06667	.93333	
Do Project	\$3,000,000	-\$1,000,000	-\$733,320
Don't do project	0	0	0

Figure 2: MS Excel implementation of the procedure outlined in the previous section



is only 70% accurate on both successes and failures, her information (EVSI) is worth less—only \$180,000 instead of the original \$320,000. If the consultant's predictions are perfect, her information is worth exactly as much as perfect information—\$600,000 or the value of the EVPI. If the consultant's predictions are only 50% accurate, you would expect her information to be worth as much as anyone who could simply guess with the same accuracy. The spreadsheet model calculates her information to be worthless, her EVSI is zero. What if she is only 30% accurate—would her EVSI then be negative? The analysis shows that the decision maker should do precisely the opposite of what she predicts. Surprisingly, the EVSI is exactly the same as if she were 70% accurate (\$180,000). The decision maker simply has to remember to do the opposite of what she suggests. It appears that the EVSI for the consultant is symmetrical, depending upon how far the consultant's predictions are from 50% accuracy. That would suggest that if she is perfectly wrong, meaning, that $P(PS|AS) = P(PF|AF) = 0$, her information would be worth \$600,000—the EVPI. The spreadsheet demonstrates it to be so. Students and practitioners find these phenomena to be fascinating. The plot of EVSI as a function of the consultant's prediction probability (of both SUCCESS and FAILURE) is shown in Figure 3.

Equally interesting results obtain from changing the prior state probabilities. For prior actual Success probabilities greater than or equal to .6, the EVSI is zero. Thus, it would make no sense to acquire additional information if the prior Success probability is greater than or equal to .6. The decision-maker can simply go ahead with the fundamental decision—introduce the product or service or not, do the project or not or whatever. The EVSI for these scenarios involving changes to the prior Success probability is shown in Figure 4. These EVSI values will also depend upon the payoffs in the payoff table. Further

Figure 3: Plot of EVSI as a function of consultant's prediction probability

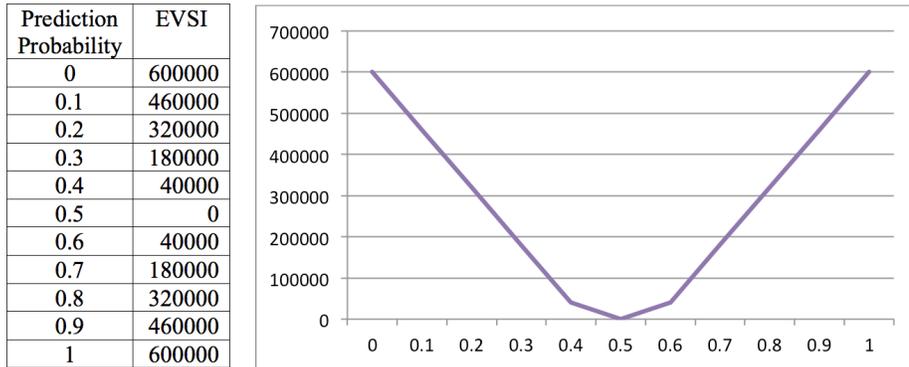
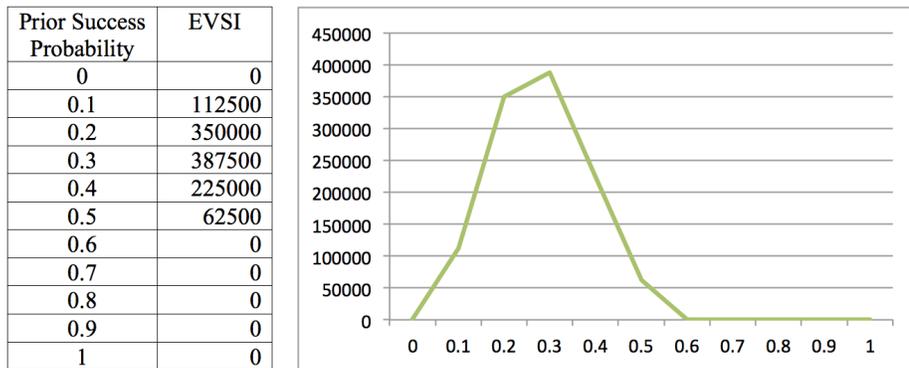


Figure 4: How the value of the additional information varies as a function of prior success probability



“What If” analyses are possible.

CONCLUSION

With this simple methodology and model, practitioners can calculate the value of additional information. Such value can then be compared with the cost of acquiring the additional information. All of this is relative to a primary decision involving whether to do a project or not, whether to do a product or not, whether to do a service or not, whether to initiate a particular therapy or not, etc. Such pursuit helps practitioners to become more quantitative in their thinking, to understand the role that “What if” can play in determining the best strategy to pursue. Such constructs help decision makers to become more analytical in their approaches to problem solving.

What these results depict is that the payoffs, the benefits/dis-benefits of the

decision problem have an effect on the value of additional information. Thus, the specific decision problem will always have to be examined to determine the precise value of the additional information. Second, the prior probabilities determine the value of additional information as well. If the prior probability of success is high, additional information may not be worth anything. Once again, the specific decision problem determines the value of relevant information. Finally, the accuracy of the additional information also has an impact on its value. Additional information whose accuracy is akin to guessing is, again, worthless.

Our experience in teaching these concepts for more than half a dozen years is mixed. Our students see their immediate professional employment as involving basically programming. They particularly struggle with the Bayesian revision concepts. We found that with

the implementation using MS Excel, students were motivated and quite capable of learning the concepts of conditional probability and Bayesian revision. Also, they were able to perceive the usefulness of these probability constructs within the context of this paradigm—how to evaluate the value to the decision maker of going after additional information. This exercise fits within the need to encourage practitioners to have quantitative competencies in a period in which employers place high value on business analytics and business intelligence.

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Management and President of
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Denmark



Antony Paulraj
Facts about Antony
Paulraj

- DBA – Cleveland State University

- 8 years of academic experience from the USA
- More than 1,5 year in Denmark at University of Southern Denmark
- Globalization Professor in Supply Chain Management
- Loves research
- Married with 2 kids
- 44 years old

Arlbjørn: What are your main areas of research expertise?

Paulraj: When I started my research as part of my doctorate program, I started to look at the broader area of supply chain management with a specific focus on strategic buyer-supplier relationships. I studied the various antecedents as well as performance implications of strategic buyer-supplier relationships. In the last 3 years or so, I started to work more on the topic of sustainable supply chain management. At the same time, I have also tried to study how various aspects of strategic buyer-supplier relationship enable sustainability along the supply chain. Recently, my research interest also includes supply chain innovation in general as well as the confluence of sustainability and innovation.

Arlbjørn: How did you become aware about the possibility to work at University of Southern Denmark (abbreviated SDU in Danish)?

Paulraj: I was thinking of moving out of USA since my family shifted back to

Building a Research Carrier in Denmark: An Interview with Globalization Professor Antony Pauraj

by Jan Stentoft Arlbjørn, University of Southern Denmark

India. I thought that it would be ideal if I could move to Europe; this way, I would be more close to my family. Therefore, I spoke to a couple of my research colleagues in Europe. And, I met you in 2011 at the EDSI conference in Wiesbaden, Germany where we had a discussion about moving to Europe. Based on our discussion, Denmark sounded like a great option. On a lighter note, you know that I completed my doctoral program from Cleveland State University. The nickname used for our sports team is Vikings. So, as you would agree, I could see a clear connection with Denmark as I was technically a Viking during my doctoral life.

Arlbjørn: Why did you decide to leave USA?

Paulraj: I had been in USA for 17 years and had worked in Academia for 8 years after my doctorate. It has been my long-standing aim to move back to India with my kids who were 10 and 7 years old at that time. We wanted to move back to India so that they can not only grow in India, but also get back to their roots. This was my main driving force for leaving USA and moving to Europe, as it is closer to Chennai, India than Jacksonville, Florida.

Arlbjørn: You have been here in Denmark for around 1½ years now. If you would summarize, what are your major impressions of work here in Denmark when compared to USA?

Paulraj: First, I used to work for a teaching-oriented school when I was in the USA. So, I had to do a considerable amount of teaching each year. Though research has always been the closest to my heart, I could never dedicate enough time to it. But now, I have moved to a school that gives me the opportunity to dedicate more time towards research. While there are some teaching assignments, I believe that there is lot more flexibility here. In most US schools, you have to teach a course every week for a total of 13 to 15 weeks per semester. At SDU you have a very flexible teaching schedule – in a nut shell, you do not have to teach 8 weeks at a stretch. Second, I feel that there is also a lot of funding possibilities here that could enable me to do solid research. Third, I feel that there is a good interface between industry and academia in Denmark. More importantly, the industry is not only willing to be involved in academic research, but is also willing to fund research projects; I personally feel that this was not the case in USA.

Arlbjørn: From a research point of perspective what do you see as the major differences between Denmark and USA?

Paulraj: While publishing has been historically considered paramount among academics in the USA, I believe that such a transition is also happening here in Denmark. At the same time, I have to say that it is not too focused on publishing. When I first came to SDU, I

remember you mentioning that it should also be about having fun – that we have to publish while having fun. On a more serious note, I sincerely believe that the abundance of resources available here makes it much easier to venture into risky as well as intriguing topics that mandate innovative research designs and data collection efforts.

Arlbjørn: You are part of ReCoE – what makes this research program interesting from a research

Paulraj: First of all, ReCoE falls within the area of sustainable supply chain management; this is one of my core research areas. Second, it is interesting to study how the offshore wind sector can be changed in order to be more cost-effective. With increasing debate around global warming and sustainable development of world economies, I believe that this program is quite strategically positioned. When we had the kick-off meeting of the research program in the end of January 2014, I heard practitioners from the offshore wind sector mention how the wind turbine supply chain is significantly different when compared to the traditional supply chain. They mentioned that in addition to the product (vertical) supply chain, every horizontal phase in the wind energy projects (Development and Consent, Installation and Commissioning, Operations and Maintenance, and Decommissioning) has its own unique supply chain. As supply chain scholars, we can clearly see that this presents a high level of complexity towards studying such a phenomena. I believe that this in itself makes the project quite interesting to all the participants. Finally the way we are positioning the research program from a data collection perspective is also quite unique. I have repeatedly heard that it is important to collect dyadic, supply chain, as well as network data to answer research questions in supply chain management. But till date, I have never had the opportunity to do something of that magnitude. So, I am delighted to be a part of this research initiative as it will involve multiple units of analysis, longitudinal data collection

FACT's ABOUT ReCoE

ReCoE is a five research program that focused on industrialization processes of the offshore wind sector supply chain. ReCoE is an acronym of "Reducing Cost of Energy in the Offshore Wind Sector through Supply Chain Innovation". This multidisciplinary project concerns strategic research aimed at delivering solutions to reduce the Cost of Energy (CoE) in sustainable offshore wind power energy systems. The basic hypothesis in ReCoE is that CoE can be reduced through industrialization. Reducing CoE in wind power systems to make them competitive with fossil fuel based energy production requires a widened supply chain management (SCM) perspective that transcends single companies within the offshore supply chain. This calls for a new perspective to occur at the interface between the technical and social science disciplines, leading to integrated business and technology solutions. Potential sources for the reduction of CoE are to be found in balanced redesigns of the supply chain and new forms for collaboration and integration among existing and new actors in the supply chain. Additionally, the offshore wind turbine industry, like other industries, will also need to concurrently exploit as well as explore their business (also termed ambidexterity). More information can be found at www.recoe.dk (ReCoE)

efforts, and multiple respondents from a dyadic, supply chain, as well as network perspective. And, in light of this novelty, it has a great potential to not only inform research as well as practice, but also result in numerous high-quality publications.

Arlbjørn: Why should people attend this year EDSI in Denmark?

Paulraj: EDSI is growing and is positioned very well in Europe. As you would agree, I have an affinity towards ESI as I was able to move to Denmark because of my first presence at EDSI in 2011. Given the topic of EDSI 2014, "Exploring innovations in global supply chain networks", Denmark is the ideal place to host it. We have a very good tradition for innovation here in Denmark. Our department has a program which is strongly grounded on innovations in business networks. We have also recently co-edited a special topic forum on innovation in business networks in the Journal of Supply Chain Management. As a highlight, we are also co-editing a special topic forum together with Ram Narasimhan, Michigan State University, in the Decision Sciences Journal which aligns well within the topic of EDSI 2014. So, I strongly believe that the participants

will benefit a lot from EDSI this year.

The 5th Annual Conference of the European Decision Sciences Institute (EDSI) will be hosted by Department of Entrepreneurship and Relationship Management at University of Southern Denmark. The conference will take place from June 29th to July 2nd, 2014 but will begin with a PhD consortium on June 28th. Selected papers will be considered for a focused issue of Decision Sciences Journal about Exploring Innovations in Global Supply Chain Networks. More information can be found at www.edsi2014.dk ■

5th Annual Conference of the European Decision Sciences Institute – June 29th to July 2nd, 2014 – in Denmark

JAN STENTOFT ARLBJØRN,
EDSI President, University of Southern Denmark

ANTONY PAULRAJ,
co-organizer of EDSI 2014, University of Southern Denmark

We are pleased to announce that the 5th Annual Conference of the European Decision Sciences Institute will be held from June 29th to July 2nd 2014 in Kolding, Denmark. The conference will be hosted by the Department of Entrepreneurship and Relationship Management, University of Southern Denmark (www.sdu.dk). University of Southern Denmark has campuses in 6 cities with more than 20,000 students and approx. 2,000 employees. A series of research activities take place on individual basis,

often in cooperation with national and international research groups. Often internal research groups, with varying composition over time, are established within the department. There is a long-standing tradition for research to take place in close interaction with companies in the area.

Conference venue and theme

The conference will take place at Hotel Koldingfjord (www.koldingfjord.dk) where the conference participants can also stay. The theme for the conference is Exploring Innovations in Global Supply Chain Networks. At the same time, papers are invited within a wide range of topics that is provided at the conferences website: www.edsi2014.dk. Deadline for paper submission is **March 15, 2014**.

Selected papers will be considered for a **focused issue** of **Decision Sciences Journal** about Exploring Innovations in Global Supply Chain Networks edited by Jan Stentoft Arlbjörn and Antony Paulraj, University of Southern Denmark and Ram Narasimhan, Michigan State University.

Spend some time before or after the conference in beautiful Copenhagen, the capital of Denmark. Experience Copenhagen and see some of the highlights such as The Little Mermaid, Christianshavn, Tivoli Gardens, Christiansborg Palace, Copenhagen Opera House, and the famous Freetown, Christiania. A must-see is the colourful harbor district of Nyhavn. And when you are there, do not forget to visit Amalienborg palace, residence of the Danish Royal Family. From Copenhagen, you can easily get to the rest of Scandinavia and experience the beautiful nature and historical capitals of Norway and Sweden.

Conference program

On June 28th we begin with a **PhD workshop** at the University Campus in Kolding. June 29th includes an optional trip to LEGOLAND®, and then a welcome reception in the evening. June 30th and July 1st are the two main conference days with keynote speeches and paper presentations.

We are honored to be able to arrange keynote speeches by Mr. Henrik Stiesdal, Chief Technology Officer, Siemens Wind Power, and Mr. Mads Nipper, Chief Marketing Officer, LEGO Group. The conference dinner in the evening on June 30th will take place at Koldinghus Castle (www.koldinghus.dk). On July 2nd, we have also organized an optional trip to Siemens Wind Power.

If you have any questions, please do not hesitate to contact Jan Stentoft Arlbjörn (jar@sam.sdu.dk) or Antony Paulraj (ap@sam.sdu.dk). We look forward to seeing you in Kolding, Denmark! ■

Getting to and from Kolding

The closest airport is Billund Airport, situated 45 kilometers from Kolding. Buses for Kolding leave the airport approx. once an hour (see timetable at the airport's website). It is also possible to arrive at Copenhagen Airport and then go by train to Kolding (takes approx. 3 hours). Take a taxi from the rail station to Hotel Kolding Fjord. Spend some time before or after the conference in beautiful Copenhagen - the capital of Denmark. Experience Copenhagen and see some of the highlights such



as The Little Mermaid, Christianshavn, Tivoli Gardens, Christiansborg Palace, Copenhagen Opera House, and the famous Freetown, Christiania. A must-see is the colourful harbor district of Nyhavn. and when you are there, do not forget to visit Amalienborg palace, residence of the Danish Royal Family. From Copenhagen you can easily get to the rest of Scandinavia, and experience the beautiful nature and historical capitals of Norway and Sweden.

44th Annual Conference of the Southeastern Decision Sciences Institute

The 44th Annual Conference of the Southeastern Decision Sciences Institute (SEDSI) was held February 19 – 21, 2014, in Wilmington, North Carolina. The conference was meticulously organized thanks to the leadership of the 2014 Program Chair, Shanan Gibson. The meeting proved to be a stimulating academic gathering with over 121 papers, panels, and workshops in 42 regular sessions. The historic district of Wilmington, North Carolina provided the perfect backdrop with its variety of architecture, unique shops and restaurants.

The three-day event featured sessions that embraced the interdisciplinary focus of the Decision Sciences Institute (DSI). Attendees enjoyed thought-provoking sessions on topics such as business intelligence, data mining, statistics, supply chain performance, organizational behavior, and healthcare management. This year’s conference also showcased best practices in innovative teaching and pedagogy in the decision sciences with the Making Statistics More Effective in Schools of Business Track and in-depth workshops on decision analytics, service learning, and designing massive online open courses (MOOCs) in the Innovative Education, Teaching and Pedagogy Track.

SEDSI aims to create exceptional networking opportunities. The golf tournament, president’s reception, and coffee breaks allowed attendees to catch up with old acquaintances and to meet new colleagues within the academy. In addition, SEDSI con-

tinues to be an attractive platform for young scholars to gain valuable experience and feedback on their work. Over 39 student papers were submitted for presentation.

The President’s Reception (with the kind sponsorship of Virginia Tech) offered the perfect end to the conference. At the reception the SEDSI community celebrated exemplary scholarship and service, two essential ingredients to the success of the conference. It is also a time that we honor the accomplishments of our outgoing President, Chris Zobel (Virginia Tech), and welcome our new President, Kellie Keeling (University of Denver). We are a vibrant community of scholars and hope that you will make plans to join us in Savannah, Georgia in 2015. For more information about SEDSI, please visit our web site at <http://www.sedsi.org>.



Above: George Lowry (Past President), Susan Williams (Vice-President of Member Services), Cheryl Aasheim (Secretary)

Below: Kellie Keeling (President-Elect) and Chris Zobel (President)



Drew Rosen (Vice President of Meetings), Shona Morgan (Vice President of Publications), Kellie Keeling (President-Elect), and Sara Kise

2014 Program Chair’s Message

Program Chair, 2014 Annual Meeting of the Decision Sciences Institute

rungtusanatham.1@osu.edu

<http://dsi-tampa2014.org>



The technologies that we now take for granted today – WEB 2.0, Twitter, DNA sequencing, MOOCs, the Internet of Everything, iPads, etc. – once existed only in the imagination of a few visionaries. Today’s technological innovations, with many more to come, are transforming business models and business education. What are the opportunities, challenges, and implications of the technologies already here or on the horizon . . . for DSI, individuals, creators and transmitters of knowledge, organizational leaders, and policy makers? The theme of the 2014 Annual Meeting of DSI, **Technology and the Rapidly Changing Global Business Landscape**, aims to stimulate conversations around this broad question.

To this end, the Program team has been working diligently to put together a conference agenda that, I trust, moves these conversations and our collective learnings forward. So, make plans to join us for:

What?	More information where?
• Over 850+ full papers and abstract presentations across 30+ tracks	Forthcoming in September 2014
• 27 workshops and 20 panels to learn new research skills or ideas and new teaching skills	http://dsi-tampa2014.org/program/professional-development/
• Provocative keynote “fireside chat” sessions with leaders who influence the destiny of business education, healthcare system design and delivery, and legal interpretations of the good and bad of technologies	http://dsi-tampa2014.org/program/

DSI annual meetings have always been a place to not only learn but also to make new friends or reconnect with old ones. To foster these friendships, the 2014 DSI Annual Meeting in Tampa is augmenting traditional social activities with more food and investing in new social events. Join old and new friends for:



A visit to the world-renowned Dali Museum for a ridiculous cost of \$13.00 per person to include transportation to-and-from the conference hotel, a small reception, and two hours of exclusive-to-DSI attendees access to the exhibits. Purchase this option as part of registering for the conference. Limit: 250 persons.

Competitive bowling! Ideal for first-time DSI attendees and doctoral students who wish to make new friends. Cost to DSI attendees = \$0.00. Limit: 40 persons. More information forthcoming at <http://dsi-tampa2014.org/keynotes-special-events/>.



Jog for health, jog for competition, jog for fun . . . Enjoy a 3-mile jog-a-thon, led by Colonel (Retired) Terry Klinker as he shares his knowledge of the local celebrities (and scandals). Perfect way to start the day and, to top it off, breakfast is on DSI. Limit: 25 persons.

DSI has always been a friendly crowd. Join DSI leaders and come say “hi” and welcome new members and first-time attendees.



INSTITUTE CALENDAR

■ JULY 2014

July 18 - 24

The Asia-Pacific DSI Region will hold its 19th annual meeting in conjunction with ASCOM and JOMSA at Yokohama National University, Yokohama, Japan. Submission deadline is April 4, 2014.

■ AUGUST 2014

August 1

Submission deadline for special issue of Decision Sciences Journal of Innovative Education. See page 22 for details.

■ NOVEMBER 2014

November 22 - 25

The 45th Annual Meeting of the Decision Sciences Institute will be held in Tampa, Florida, at the Tampa Marriott Waterside Hotel and Marina. Submission deadline is May 1, 2014.

■ NOVEMBER 2015

November 21 - 24

The 46th Annual Meeting of the Decision Sciences Institute will be held in Seattle, Washington, at the Sheraton Seattle Hotel.

For updated 2013 regional meetings listings, visit www.decisionsciences.org/regions/default.asp

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