K. J. Somaiya Institute of Management Studies & Research

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Quantinuum Newsletter

Quantinuum -
The Quants Forum

Its all about NUMBERS...

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From the Faculty's Desk...

Hi All,

It gives me great pleasure to welcome all of you to the new academic year 2011-2012. Students always wonder what are the applications of Quantitative Methods and Decision Making in actual life. How does it really matter whether a test is found to be significant or not. What is meant by significance? How does correlation affect us in our day to day life? How are decision trees different from actual trees? Didn't somebody say "Lies, Damned Lies and Statistics"? The team at Quantinuum considers it a challenge to bust various myths surrounding this much dreaded discipline.

The current issue focuses on varied topics like relating India's loss at ODI's to the downward movement of the stock market, understanding what is Multi-criteria decision making and decoding the Quant Guru of the Month. Additionally the team has added a new feature – Alumni Quannect where our alumni Soumyadut Nag (PG 2009-2011) has given detailed inputs on how students should prepare for their placement interviews for Market Research firms.

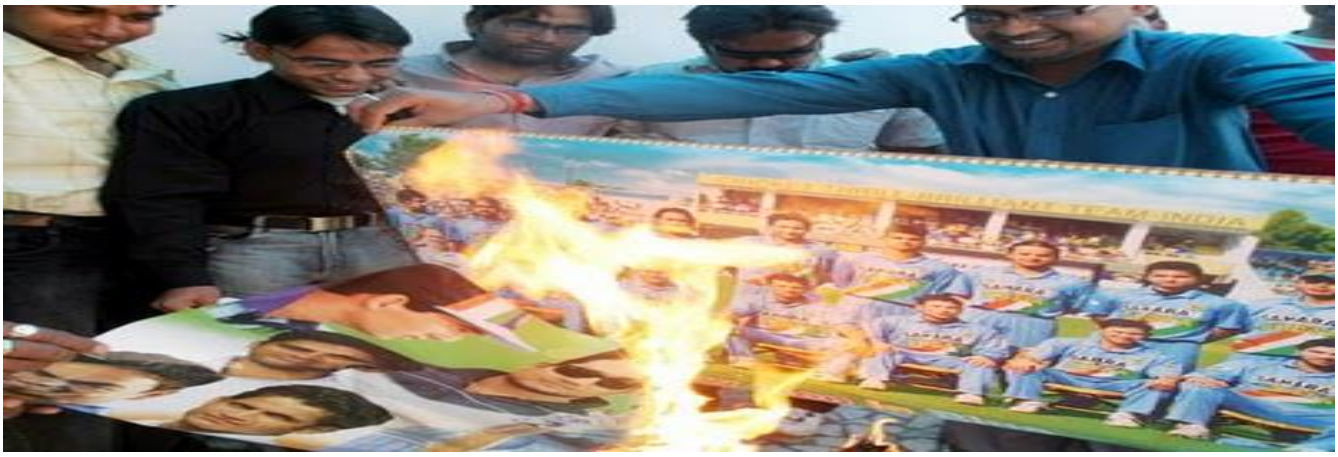
So here's wishing our readers Happy Reading !!!

Regards

Prof Anjali

TEAM QUANTINUUM

MAIN STORY: Markets Dive when India loses ODIs



[The following article is based on research by Monash University's Smyth and Mishra, emotions impact objective decision-making]

A new research shows that when India's cricket team loses one-day internationals, the stock market takes a beating, but if master blaster Sachin Tendulkar is on the losing side, the damage to the bourses is even worse.

Research by economists Russell Smyth and Vinod Mishra of Monash University, in Australia, suggests the performance of the Indian cricket team in one-day matches can significantly impact the fortunes of the Indian stock market, an official release said. "While a win by the Indian cricket team has no statistically significant upward impact on stock market returns, a loss generates a significant downward movement in the stock market," Smyth, the Head of Monash University's Department of Economics, said. "India's main index, the CNX Nifty, shows that the Nifty index was generally flat the day after a win, but the day following a loss, the index dropped by an average of 0.231 per cent. The drop following a loss was more than seven times greater than the movement following a win," Smyth said.

Furthermore, when Sachin Tendulkar, India's most popular cricketer, is on the losing side, the loss on the stock market is almost 20 per cent more. "In the 100 matches in which Tendulkar played and India lost, the average return the day after the match was 0.328 per cent, an 18 per cent higher drop compared to the average drop after losing a match (which Tendulkar did not play)," Smyth said.

"A sporting event is a non-economic phenomenon and, as such, one might expect that stock prices will not be affected. However, behavioral finance suggests that large sporting events affect the sentiment of viewers-cum-investors, resulting in upwards or downwards 'mood swings' in the market, which are reflected in stock prices," Smyth said. According to Smyth and Mishra, emotions can impact normally objective decision-making, the university release said. "A feeling of sadness might make investors withdraw from the world and the stock market, thus resulting in reduced trading for a while, whereas anger might make them behave in an impulsive manner, which might involve selling of a lot of the stocks," Smyth said. "When you are tuning in to follow how Australia performs against India in one-day internationals, before you write them off as meaningless matches, spare a thought for what the outcome might mean for Indian investors," Smyth said.

GAURAV BHARGAVA
PG ALUMNI 2009-2011

QUANT TRIVIA

"There are two ways to do great mathematics. The first is to be smarter than everybody else. The second way is to be stupider than everybody else -- but persistent. "

Raoul Bott

QUANT QUERY OF THE WEEK 1

While enjoying a fun ride at the Essel World Raj propounded a puzzle which displays the sharpness of his mental abilities.

"One third of the number of children riding ahead of me, added to three-quarter of those riding behind me gives the correct number of children on this Merry-Go-Round" is the way he puts it; tell how many riders were at this whirling amusement park?

QUANT QUERY OF THE WEEK 2

Below is a queer little puzzle which occurred one day at an archery meeting.

The youth who received the first prize scored exactly one hundred points.Each arrow can Can you find out how many arrows he must have used to accomplish the feat?

EDITORIAL TEAM

Answers and name of solvers will be published in the next issue. Mail your answers to simsr.quantinuum@gmail.com

Quancept of the month: Multi-criteria decision making (MCDM)

"Multi-Criteria Decision Making (MCDM) is the study of methods and procedures by which concerns about multiple conflicting criteria can be formally incorporated into the management planning process", as defined by the International Society on Multiple Criteria Decision Making.

MCDM is also referred as:

* Multi-Criteria Decision Analysis (MCDA)
* Multi-Dimensions Decision-Making (MDDM)
* Multi-Attributes Decision Making (MADM)

The Decision Theory

Decision analysis looks at the paradigm in which an individual decision maker (or decision group) contemplates a choice of action in an uncertain environment. The decision theory helps identify the alternative with the highest expected value (probability of obtaining a possible value). The theory of decision analysis is designed to help the individual make a choice among a set of pre-specified alternatives. The decision making process relies on information about the alternatives. The quality of information in any decision situation can run the whole gamut from scientifically-derived hard data to subjective interpretations, from certainty about decision outcomes (deterministic information) to uncertain outcomes represented by probabilities and fuzzy numbers. This diversity in type and quality of information about a decision problem calls for methods and techniques that can assist in information processing. Ultimately, these methods and techniques (MCDA, MCDM) may lead to better decisions.

Decision Methods

Our values, beliefs and perceptions are the force behind almost any decision-making activity. They are responsible for the perceived discrepancy between the present and a desirable state. Values are articulated in a goal, which is often the first step in a formal (supported by decision-making techniques) decision process. This goal may be put forth by an individual (decision- maker) or by a group of people (for example, a family). The actual decision boils down to selecting "a good choice" from a number of available choices. Each choice represents a decision alternative. In the multi-criteria decision-making (MCDM) context, the selection is facilitated by evaluating each choice on the set of criteria. The criteria must be measurable - even if the measurement is performed only at the nominal scale (yes/no; present/absent) and their outcomes must be measured for every decision alternative. Criterion outcomes provide the basis for comparison of choices and consequently facilitate the selection of one, satisfactory choice.

Mathematics Applied To Decision

Criterion outcomes of decision alternatives can be collected in a table (called decision matrix or decision table) comprised of a set of columns and rows. The table rows represent decision alternatives, with table columns representing criteria. A value found at the intersection of row and column in the table represents a criterion outcome - a measured or predicted performance of a decision alternative on a criterion. The decision matrix is a central structure of the MCDA/MCDM since it contains the data for comparison of decision alternatives.

Different Decision Methods

At a practical level, mathematical programming under multiple objectives has emerged as a powerful tool to assist in the process of searching for decisions which best satisfy a multitude of conflicting objectives, and there are a number of distinct methodologies for multi-criteria decision-making problems that exist. The decision theory is descriptive when it shows how people take decisions, and prescriptive when it tells people how they should take decisions. These methodologies can be categorized in a variety of ways, such as form of model (e.g. linear, non-linear, stochastic), characteristics of the decision space (e.g. finite or infinite), or solution process (e.g. prior specification of preferences or interactive). For an example of a multi-objective methodology for the management of water resources integrating climate change and climate variability data, look at the article on Climate and Water in the West: Science, Information, and Decision-Making.

Taking The Future Into Account

The true goal in integrated decision-making support is to provide the decision-maker with the ability to look into the future, and to make the best possible decision based on past and present information and future predictions. In the case of sustainable development, this means to be able to predict in advance the risk and vulnerability of populations and infrastructure to hazards, both natural and man-induced. This requires that data be transformed into knowledge, and that the consequences of information use, as well as decision-making and participatory processes, be analyzed carefully.

EDITORIAL TEAM

QUANTINUUM NEWSLETTER

ALUMNI QUANNECT

Soumyadut Nag from the batch of 2011 had shown a keen interest to join Market Research and he was very focused during the placement time. Hence we thought it would be great if we could know from him firsthand how he prepared for the Interview round for the MR companies. He was shortlisted by AC Nielsen as well as IMRB.
Prof Anjali is part of the Operations Management & Operations Research Department at SIMSR. She has 11 years of work experience of which three years were spent in market Research. She worked with Market Research Firms – TNS Global and AC Nielsen before joining SIMSR.

Prof Anjali: How should students prepare for Market Research given that quite a few from the senior batch are interested?
Soumyadut: Well my personal experience says, Nielsen and IMRB require completely different preparation modes at least for the prelim round. While Nielsen was hardcore apti (CAT style), IMRB prelims were more based on reasoning. We were given very small caselets (some 5-6 liners) and asked what we think is the best option of the 4 choices. There was no one correct answer like Nielsen apti. While one can get ready for Nielsen by practicing, IMRB is a different ball game, where unless one has logical reasoning in the correct place, it's tough to sail through.

Prof Anjali: You were shortlisted by AC Nielsen as well as IMRB. What were the subsequent rounds of interviews like by both the companies?
Soumyadut: The subsequent rounds in both the companies were similar. We were given cases like---
A company wants to come up with a variety of ice cream. It tested 4 flavours. These are the ratings of each. Now tell me which flavour it should launch. Which one should be their second choice if they can't come up with the best choice? -this was an IMRB question.
These are the ratings on two juices. Now tell me which drink is which flavour(orange/mango)--this was a Nielsen question, where they will show just 1 row of data and ask, whatever you say, they will then reveal another row and say "now you have this data as well, now tell me" ..... and this is continues till each juice has some 6-7 sets of data (average likeability, newness of product etc)
If you are doing a product test say for rice for a company what are the attributes you'd want to ask questions on (like boiling time, in mouth feeling, stickiness to utensil and stuff)
Nielsen came for 3 profiles. So they had 3 rounds, but they were not eliminators. IMRB had 2/3 rounds too but they were mostly elimination rounds.

Then there were typical HR questions
What would you do if one key member of your team has genuine problem of staying back, say she is a married woman, whereas others in the team are staying back?
Tell me 5 alternate uses of ---- brick, condom, pot etc.

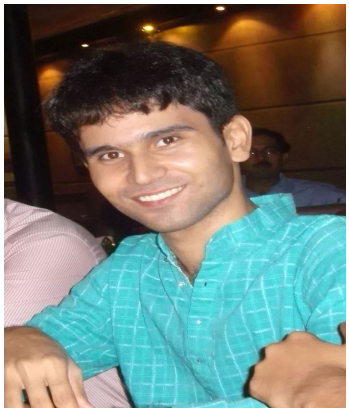
Prof Anjali: Now that you are working at IMRB could you give a brief description of your work?
Soumyadut: Well life @ IMRB is pretty chilled. The best part is the quality of work. Fortunately for me I got ITC FMCG as my client so I am in complete love with my job. But mostly in Kolkata it's a tobacco dominated client base. We get brief from client, prepare questionnaires, and after getting go ahead from the client on costing & questionnares proceed with the fieldwork, data is punched and coded by Analytics..... we run the database, analyze and report in ppt format. Nielsen, the biggest fish in the ocean, has just stepped into India and they are high into poaching from us. We are expecting stiff competition from them in near future. So students can go there as well. But yeah, IMRB pays the fresh MBAs a notch more :)

What else? Oh yes, we do have late evenings but very rarely. Saturdays we generally are at home, coz work life balance is being strictly prioritized @ IMRB. The best thing is everyone is very very approachable here. For work related matters there's absolutely no power distance till the Senior VP :)..... We have annual retreats, 4 Townhall meets per year..... and yeah the average age is in the late 20s to early 30s.

Prof Anjali: How is IMRB viewed as a company by outsiders?
Soumyadut: The springboard brand IMRB provides when it comes to switching is parallel to none. From mid management roles (branding etc) to senior management ones (Regional heads)..... IMRB people are valued greatly, not only in the MR industry, but also in various ones---- viz Cement, Telecom, FMCG.

Prof Anjali: Do you have any handy tip for the current batch on how to crack the MR interviews?

Soumyadut: The tip which you gave me and I have passed on to all who has asked for the same ---------- start reading the book market Research by Nargundkar..... though students won't be asked straight dollies like WHAT IS CONJOINT? But if they can apply the concepts in the caselets which they will be given beyond the prelim rounds, they will surely score some brownie points, and trust me the book helps in cracking these caselets too.



SOUMYADUT NAG
PG ALUMNI 2009-2011

QUANT *GURU* of the MONTH

Karl Friedrich Gauss was born in Germany in 1777.
He is regarded as one of the greatest mathematicians who ever lived.

Gauss showed his talent for mathematics very early. One day when he was barely three years old, he overheard his father mumbling the payroll figures for the workers in his small brick-laying business. Carl listened and, working in his head, he found a mistake in his father's calculations!

When he was about 10 years old his teacher gave the class a long problem to do to keep them occupied: they had to add together the first 100 whole numbers - this was before the days of calculators. Much to the amazement of the teacher, Gauss gave the correct answer in seconds. He had noticed that the numbers could be added in pairs to give $1 + 100 = 101$; $2 + 99 = 101$; $3 + 98 = 101$ and so on. This meant that the total must be $50 \times 101 = 5050$.

Shortly before his 19th birthday, Gauss became the first person to prove that a regular polygon with 17 sides can be constructed using only a compass and straight-edge. This was the first discovery in Euclidean geometry in 2000 years.
In 1801 an asteroid Ceres was discovered but then disappeared from view. Gauss was able to predict exactly where it would reappear.

Gauss devoted his life to the study of mathematics and was Professor of Mathematics at the University of Gottingen for nearly 50 years. His work influenced almost every area of the subject.

GAURAV KR AGARWAL
PGDM FINANCE
2010-2012

SIMSR

Quantinuum, the Quants forum of KJ Somaiya Institute of Management Studies and Research is formed with two objectives. Firstly to remove the common myth from the students mind that mathematics is difficult. Secondly to give students an exposure on how to make decisions in real life business problems using quantitative techniques. This helps to bridge the gap between theory and the practical application.

For any further queries and feedback, please contact the following address

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We would like to congratulate the winners of the Quant Star Event held by the Quantinuum Forum on the 22nd of January, 2011. Out of the 64 students who took part in the event in teams of 2 each, the following emerged victorious.

1st: Neerav Agarwal and Harshit Anjaria (PG-FIN 2010-2012)
2nd: Saurabh Shah and Sreejith (PG-FIN 2010-2012)
3rd: Shinu Nair and Prachi Garg (PG-IB 2010-2012)