Decision Making Under Uncertainty

Think clearly, act decisively and feel confident – Unilever’s story

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Think Clearly – Act Decisively – Feel Confident
In any large dynamic organisation, complexity impacts decision making.
Outline of presentation

Introduction to Unilever and the Decision Analysis Group

What is Decision Making Under Uncertainty?

Lessons learned from our journey
Unilever is a large, culturally diverse and complex organisation

174,000 employees in 150 counties with a large degree of cultural diversity
The Decision Analysis Group is part of Finance Excellence and our responsibilities include…

Development  Learning  Consultancy
What is Decision Making Under Uncertainty (DMUU)?

DMUU is a disciplined, methodical / structured approach to decision making, with probabilistic analysis at the heart of its logical reasoning.
Why do we need DMUU?

- Faster decision making would increase Unilever’s agility in the market place.
- Most of our important decisions involve many stakeholders who often have differing perspectives. Ultimately, we need to think and act as a coherent team.
- Our important decisions are often complex in nature, have a high degree of uncertainty and can become sources of internal tension due to differences in priorities and objectives.
- Our focus tends to be internal rather than the external and leads to important opportunities and threats being overlooked.
DMUU is routinely used in two ways...

- Making strategic decisions
  “choosing the right path”

- Proactively managing risks and opportunities
  “running the path”
Strategic decisions require a process that addresses all the elements of decision quality…

**Diagram:**
- **IDENTIFY PROBLEM**
- **FRAME**
- **STRUCTURE**
- **ANALYSE**
- **RECOMMEND**

**Decision Makers**
- Review 1: Review of framing and structuring.
- Review 2: Review of key data and confirm frame is still valid.
- Review 3: Discussion of analysis, agree decision and actions.

**Evaluation Team**

- Appropriate frame
- Compelling alternatives
- Reliable information
- Criteria & trade-offs
- Logical reasoning
- Commitment to action
DMUU is being actively applied across Unilever, in areas such as…

…Innovation, Mergers & Acquisitions, Supply Chain, Safety, Regulatory and other complex one-off decisions.

All these applications have common features: there are multiple compelling alternatives; there are significant contradictions / disagreements on how to proceed; and stakes are high.
In 1999, DMUU was used to move pro.activ through the Novel Foods regulatory process in Europe

- Becel / Flora pro.activ is the world’s best-selling cholesterol lowering food brand
- An estimated 13 million households currently benefit from Becel / Flora pro.activ products
- Becel / Flora pro.activ has been approved by regulators and endorsed by health care professionals worldwide
- Sales of pro.activ have grown by over 25% in each of the last three years

Prior to the analysis, key decision makers were in disagreement and considering several alternative options (including cancelling the project outright) – whereas, the application of DMUU won senior management commitment to a single course of action that drove the pro.activ product on the market. This analysis resulted in major product launches in all major European countries within 9 months, with global sales in excess of €160 million per annum.
The vision for DMUU...

... is for high quality decision making to become the norm.

Adopted enterprise wide

Fully integrated with ways of working

Changes the culture
Building a sustainable Decision Analysis capability requires…

**People** + **Tools** + **Process** + **Applications** + **Organisational Structure**

- Developing best practice & providing training
- Designing to address weaknesses in the organisation’s culture
- Focused efforts to build credibility
- Created structure to support & build for the long term
The journey so far…

DMUU is now a standard part of our innovation stage-gate process and probabilistic business case are now required for all large projects.

To date we have trained >400 finance managers in the use of DMUU and Palisade’s DecisionTools Suite software.

It is used on a wide range of projects and is now being applied to other applications.

Internal global communities of practice have been set up.

We have set up an internal consultancy function to provide expertise.
Lesson 1: Be clear on what you want to focus on and be realistic about timescales and resources

Supply chain inventory optimisation
Financial hedging instruments
Portfolio optimisation

Create a roadmap of key objectives and timescales… then actively monitor it!
Lesson 2: Spend the time to identify external partners and appropriate tools and techniques

The overall DMUU process is based on the Strategic Decisions Group’s ‘Dialogue Decision Process’

DecisionTools Suite was chosen as the principle analysis software due to its flexibility and ability to do Monte Carlo and decision tree analysis.
Our Palisade partnership extends to more than software supply

- Training
- Help desk support
- Licensing of software
- Maintenance and roll-out of updates
- Future development of software
Lesson 3: Think about the organisational structure you need to deliver a sustainable capability…

Unilever’s vision

Creating a specialist in-house consultancy

Up skill entire population

Across whole organisation

Application Area

Selected applications

Direct customer requiring work (decision clarity and complexity)

Project Leaders & Project Teams

Senior Decision Makers
This nodal structure is scalable, adaptable and provides rapid response to business needs.
Lesson 4: Skill development is more than training

Acquire
- E-learning courses
- Practitioners residential courses:
  - 4-day Practitioners Workshop
  - 3-week Advanced Practitioner Programme
- On-the-job learning with an experienced / advanced practitioner(s)

Practice
- Ad hoc support

Transfer to job
- Build experience with own projects
- Participate in local CoPs
- Consult library of best practice examples & user guides
- Use core team for consultancy

Transfer to others
- Pro-active involvement in the global CoP
- Develop best practice guides
- Mentor novices
- Help teach courses
- Helpdesk
To embed DMUU we have developed an integrated learning programme

Decision-Makers
- Proactively managing risks and opportunities
  "running the path"
- Making strategic decisions
  "choosing the right path"

DMUU Practitioners
- @RISK LiveWeb
- Practitioners Workshop
- Advanced Practitioners Programme

Project Leaders and Evaluation Teams
- Value of Decision Quality for Project Leaders
e-Learning is a new addition to our training programme...

Initial pilot is for software training and combines theory with videos on how to use the software.

This format provides training to people who find it difficult to travel to classroom based courses and is also a useful refresher for course participants.
Lesson 5: Reduce complexity for novices and continue to support them

\[ \Theta(b) = \int_{-\infty}^{b} \frac{1}{\sigma \sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} \, dx \]

\[ p(B|A) = \frac{P(A|B)P(B)}{P(A)} \]

Latin Hypercube sampling

Regression, Correlation, Advanced Sensitivity Analysis

Convergence monitoring

Skewness

Kurtosis

Chi-Sq

Discrete [Integral Domain]

“…percentile value of the subset median in the distribution generated for the whole simulation…”
To help novices move up the learning curve, we have made it easier to...

**Build models**
- Standardised model input / calculation sheets
- Subjective data collection protocols
- Recommendations on distributions and input parameters
- Use of influence diagrams and other tools to structure models
- Macros for specialist jobs

**Analyse and communicate output**
- Recommendations on most appropriate analysis techniques
- Recommendations on how to present distributions
- Macros to create consistent graphics
- Integration into other Unilever processes

**All supported by**
- User guides for whole DMUU toolkit
- Library of best practice examples
- E-briefings
- Community of Practice
- Network of Advanced Practitioners
- Expertise from core team
Lesson 6: Monitor progress and actively engage Decision Makers in the embedding process

The progress of DMUU is being closely monitored by Unilever’s Finance Leadership Team. A Road Map is being used to check progress in each part of the business, including looking at:

• Application usage (both in terms of building probabilistic business cases and helping to evaluate complex decisions)
• Skills development
• Building appropriate support infrastructure (including Advanced Practitioners mentoring colleagues and communities of practice)
• Raising awareness with Business Partners
Lesson 7: Celebrating success is crucial…
… last year we held our first internal DMUU Awards.

The Awards recognised the great DMUU work being undertaken in Unilever and was also used to strengthen and build the DMUU community.

There were three types of awards:

**DMUU Embedding Award:** for the greatest progress in embedding DMUU practices within Unilever.

**DMUU Project Award:** for the best use of the DMUU toolset and its impact on the decision making process.

**Special Award for “Pushing the Boundaries”:** for extending the use of DMUU to new application areas or new techniques.
Lesson 8: Evolve!

Organisations do not stand still – be prepared for the future.

From its initial application in 1999 to the present day, Decision Analysis techniques are at the forefront of making a cultural change to the way Unilever approaches and analyses strategic decisions.

Organisations do not stand still and neither should the application of DMUU. We are constantly looking internally and externally to identify future trends and applications, and evolve our tools and models to ensure Unilever is at the forefront of applying Decision Analysis.

Keep looking internally and externally to identify future trends and applications.