

Problems, Problems, Problems!

Problems, problems everywhere,
Nor any time to think.
Problems, problems anywhere,
The profit line doth shrink!
Inspired by Samuel Taylor Coleridge

Decisions, Decisions, Decisions!

*Do you have the decision-making albatross
around your neck?*



At Your Service

Solutions, Solutions, Solutions!

Operations Research modelling may be your salvation.

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NORCA Consulting

Operations Research

Operations Research is a philosophy used to develop models of systems or processes in a manner that will facilitate improving the performance of the system or process. It can be applied in the management and improvement of all types of private and public sector enterprises.

Operations Research provides the basis for a *Decision Support Service* for all levels of management.

NORCA's experienced Operations Research consultants assist clients in obtaining superior results and help them overcome complex management problems, using the methodology of Operations Research. The problem centred focus and analytical methods of Operations Research are particularly relevant for difficult to define issues where wrong outcomes may be particularly expensive, result in costly changes and thus result in a significant impact on the bottom line.

NORCA Consulting At Your Service.

NORCA Consulting was formed in 2000 by a group of Operations Researchers and Statisticians to address the need for a co-ordinated approach to the provision of high quality Mathematical, Statistical and Operations Research expertise. NORCA has been formed as a network of collaborating individuals who can provide an extremely flexible approach to data analysis and modelling and also to facilitate the synergies of a group of people with similar, but complementary quantitative and qualitative skills and experience.



NORCA Consulting

NORCA's Core Philosophy

Our philosophy is the provision of an expert modelling service combining deliverable outcomes to clients with a focus on *skills transfer*. We provide value to companies wanting to avoid the overhead of specialist internal consultants, but wishing, nevertheless, to build and sustain analytical and business modelling skills within their business. NORCA realises this can best be achieved by *helping* clients' operating units to do things better themselves. Our approach is the result of a conscious plan, devised to deliver a marketable service based on the skills of our people.

Vision

The vision of NORCA Consulting is to bring our analytical skills and experience to management, to facilitate the process of achieving superior quality business decisions in Australia and beyond.

Mission Statement

NORCA Consulting's mission is to work with all levels of management to support their decision-making processes, through creative problem structuring, data driven modelling and pro-active implementation.

Our Approach

We provide an independent customer focused service, taking into account the social, cultural and environmental issues of an enterprise. This is where an Operations Research orientated management consultancy comes into its own. Our personnel have a wide range of business experience and our links with tertiary institutions & academic research centres provide a strong backup capability.

It is very easy to fall into the trap of defining performance as a wish list of *Key Performance Indicators (KPIs)*, with only a cursory review of their inherent trade-offs. Performance is a complex, multi-faceted activity where day-to-day trade-offs are inevitable. It is important that a resolution to a problem does not bias the day-to-day decisions / behaviour to the achievement of a single KPI, e.g., minimise costs without regard to the other KPIs. By structuring the set of inputs of business or social units against the set of desirable outputs, it is possible to arrive at decisions that provide the best balanced outcome for customers, employees and shareholders.

“Another trap is that for large spreadsheets the issue is how many errors there are, not whether an error exists.”¹ Good model design can help avoid these problems and the best way to start is by auditing existing spreadsheet models - and also the wider management decision processes surrounding the models. NORCA Consulting is well qualified to audit corporate spreadsheet models and decision processes.

¹ Panko Raymond (1998), What We Know About Spreadsheet Errors.



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How do we work?

We use a staged approach to propose, develop and implement effective management decision aids. The core approach is to use the discipline of model building from a scientific standpoint in an Operations Research framework. Extensive use is made of data analysis and mathematical formulations to create specific purpose models, whose greatest utility occur in complex, highly variable situations where problem structuring becomes an issue.

Stages

The stages of a OR consultancy may involve:

- an audit review of existing models and/or business decision processes.
- development of a proposal for the construction and implementation of a statistical / OR model.
- application of the seven-step OR methodology to the proposed project.
- design and delivery of custom workshops on the use of the model to support business decision processes.

Model building

There are many advantages in the use of models to support management decision processes. Properly implemented they can form part of the organisation's learning and documentation procedure, thus becoming a part of the business knowledge and memory. Over time, conditions may change or deeper insights may be gained. A well designed model will be relatively easy to modify in the light of additional knowledge.

How we operate

NORCA Consulting can operate in either of two ways, as determined by the client's needs and circumstances.

1. A consulting assignment may be focussed on a specific project or need, on a fee for service basis. While this has elements of the role of a traditional management consultant, the added value is greater because of our emphasis on **staff mentoring** and our follow up offer of a **post implementation review**.
2. We can operate under our unique *External Part-time OR Manager (EPORM)* concept where we provide a mentoring service on a retainer basis over a period such as a year. This is a service expressly designed to provide clients with all the *benefits of an internal consultancy unit, but without the overheads*.

Either way, the following issues have been identified as crucial to our form of operation and what we deliver:

- practicality and viability of all project deliverables
- ownership of recommendations, systems and alterations by all stakeholders
- transfer of skills to client staff as required to sustain the benefits



NORCA Consulting

The People

NORCA Consulting is a body of individuals with a broad range of expertise who hold similar interests within their wide variety of experiences:

- **Dudley Foster** has over 30 years experience in Operations Research in the UK, Australia and New Zealand. This experience includes 18 years in industry, 6 years in academia and 8 years as a consultant. A lot of his work is related to business improvement across the interface between Manufacturing and Marketing. He is an expert on financial modelling with a focus on the economic evaluation of investment proposals and the design of generic financial models. He is a Senior Academic Associate with the Graduate School of Business at Victoria University.
- **Harry Gielewski** has worked in OR / Statistics / Model Building for over 30 years. He has worked on a large variety of projects in Australia and Europe, as an internal and external consultant in numerous business sectors, in government and in Academia. His main areas of interest are in forecasting, TQM, Statistical Process Control, statistical analysis, simulation, decision analysis, education, model building and the use of IT for decision making. He maintains academic links with RMIT, Victoria and Swinburne universities through lecturing and consulting
- **Howard Hinds** has over 30 years experience as a marketer in the oil industry and network property development business and is a committed user of Operations Research services. Until recently he was National Property Development Manager with 7-Eleven. Prior to this he ran his own property consultancy business, Hindsite Pty. Ltd. Earlier he held various management positions with Shell Australia, being responsible for the control and development of retail outlets, distributor depots and direct Shell sales. He held the position of Chairman's Representative in Tasmania and was Chairman of the Tasmanian branch of the Australian Institute of Petroleum.
- **Paul Lochert**, has over 35 years of teaching experience in the areas of applied statistics and operations research with a focus on applications in business, computing, engineering and social science. During this time, Paul has carried out a diverse range of consulting assignments for both Government agencies and the private sector. He is currently an Honorary Associate of Monash University where he formerly held the position of Associate Professor. He has also spent time seconded to commercial organizations, including 6 months with Control Data Australia as an internal consultant and 6 months with Shell Australia's Operations Research Department.
- **Kaye E. Marion** is a Senior Lecturer in the Department of Statistics and OR at RMIT, where she is responsible for programs in operations research, econometrics, time series analysis, forecasting and simulation modelling. Following a period as an industrial chemist, she gained extensive experience in applied statistics and market research at the Gas & Fuel Corporation, BP Aust. Ltd. and BHP Co. Ltd. Since joining RMIT in 1973, her consulting work has covered a wide range of industries and problem areas and she places particular emphasis on the use of graphical techniques to identify relationships and communicate analytical results.



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Carolyn M. Evans, who is the Sydney representative for NORCA Consulting, has experience in operational and general management, and exposure to both sides of the Board table. Carolyn started her career with 15 years in the Royal Australian Air Force, including a year on a Defence Fellowship, researching issues in inventory management. She was decorated for her contributions to Defence logistics. Since 1994, Carolyn has worked for Qantas, MBF, and an industrial consultancy specializing in manufacturing improvement. Her focus as consultant is on: strategic options development; industry analysis; optimization, forecasting and process improvement; and eBusiness - the latter building on experience she gained in a leadership role at Qantas. Additional Support

Additional Support

Various levels of additional expertise and support are available to NORCA to meet specific management needs. First, NORCA has a strong outer network of seasoned OR professionals with a wealth of business experience in specific application areas. Where needed, resources can be supplemented through our links with universities. These links include relationships with world class experts in particular fields at universities in Australia and overseas.

This combination of a strong core team, an outer network and university links gives NORCA an unrivalled capacity to provide each client with a team, which really is the best team for the job. This set-up provides NORCA with a distinct advantage over larger organisations with a focus on maximising the utilisation of permanent staff.

Services and Products

❖ **Model auditing**

Review of existing model structure
Mathematical formulation
Spreadsheet review

❖ **Data-driven modelling**

DEA – Data Envelopment Analysis
Data Mining
Demand forecasting
Financial modelling
Forensic statistical analysis
Inventory Control
Linear Programming
Logistics modelling

Optimisation
Quality Assurance
Quality Control
Simulation
Statistical Modelling
Statistical Decision Theory
Stochastic Optimisation
Surveys

❖ **Pro-active implementation**

Mentoring and skills transfer
Post Implementation Review



NORCA Consulting

Our Experience & Knowledge Centres are based on activities in the following areas:-

- Exploration and Production
- Oil Marketing
- Manufacturing
- Finance & Banking
- Human Resources
- Information & Computing
- Transportation
- Postal Services
- Insurance
- Wheat
- Defence
- Health
- Environmental modelling
- Telecommunications



External Part-time OR Manager (EPORM)

The *External Part-time OR Manager* concept is a unique service expressly designed to enable you, the client, to maximise the short and long term value of your expenditure on consulting services. The aim is to capture all the *benefits of an internal consultancy without the overheads*. To this end, the following issues have been identified as crucial:

- practicality and viability of all project deliverables
- ownership of recommendations, systems and changes by all stakeholders
- transfer of skills to client staff, as required, to sustain the benefits

The core philosophy of the service is the focus on skills transfer. This is of particular value to companies which want to avoid the overhead of specialist internal consultants, but wish, nevertheless, to build and sustain analytical and business modelling skills within their business units. This is achieved by helping clients do things better themselves, rather than doing things for the client.

How Does The EPORM Concept Work?

The usual method of implementing the concept is to set up an agreement with a client to operate for a defined period (say a year) as an *External Part-time OR Manager*, with a focus on problem definition and mentorship of internal staff. For the duration of the contact:

- the consultant would hold monthly meetings with the client
- there would be an agreed minimum number of billable days (say 12)
- there would be an agreed maximum number of billable days (say 36)
- most of the work would be done by internal staff, but NORCA would provide QA of all project deliverables
- no time would be charged by NORCA over and above the agreed maximum number of consulting days, unless a separate agreement was negotiated.

Client Benefits Of The EPORM Concept

The **EPORM** arrangement is designed to maximise both skills transfer and value the client obtains from his expenditure on using consulting services. Other advantages are client *ownership* of recommendations made and/or systems developed; client access to an independent expert *outside the hierarchy* of the organisation; plus all the benefits which flow naturally from a long term relationship. In particular, the ongoing relationship reduces the client time spent briefing the consultant on the background to tasks, which are important but don't amount to more than a few days work. Furthermore, these benefits can be obtained without the overheads associated with an in-house specialist: the *minimum* annual commitment is only about 5% of the cost of employing a full time staff member with the requisite qualifications and experience.



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Post Implementation Reviews

We do not just walk away at the end of an appointment or project. We provide a self-monitored quality assurance programme, by returning, at an appropriate or agreed time after the completion of our appointment, to review the results, the processes we used and to measure the success of our skills transfer process to our client's staff. In this way, we hope to stimulate continual improvement in all modes of the service we deliver and to ensure an ongoing benefit to our clients and their staff.

Staff Mentoring

An important *point of difference* with our consultancy is the 'staff mentoring' plan. Depending on the reasons for our appointment, we aim to transfer appropriate skills to the client staff with whom we work and to provide them with an understanding of the operations research methods and techniques we employ. Sometimes this will be for a specific project where counselling may continue well after a project is finished. Other clients may enter into an ongoing arrangement, whereby we act as mentors to staff to grow their skills and counsel them over a number of projects. NORCA places particular emphasis on this mentoring process and skills transfer to our clients' staff.