

REINVENTING

Operations
Research

at

INTELLIGENT INSIGHTS INTERNATIONAL



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It is surprising that many decision makers do not hear about the term operations research (OR). Interests in OR was developed right after the first world war, which stems from the need for scientists to weigh multiple decisions related to man and warfare for the purpose of conflict resolution. Nowadays, this discipline has transcended into the business world where striking the right balance between the reduction of risk and the maximization of profitability remain success factors for any organization. This coupled with globalization, deregulation and liberalization creates a business context that is more complex than ever.

Most managers make decisions based on past experience. Business directions that were taken usually reside in the comfort zone and familiarity of the managers. Therefore, the best alternative might not be known to the decision maker. Executive employees are not willing to share the problems in fear that they have to be the ones needed to take leadership in those areas. There is also a “what if” factor of failing to champion their cause successfully. At best, some important information that could enhance the productivity and efficiency of the company will take a long time to go through the chain of commands prior to reaching the top. The flow of information takes through a series of stage gates often noted with boardroom meetings and performance reviews, as well as multiple 360° evaluations. By the time any action is taken, thousands of dollars and time could be lost, let alone repeat purchases/services and your client’s confidence.

“What can OR consultants do for us when they are physically external to our business decisions?”

OR consultants provide you with a scientific methodology that analyses your options together with all the experience that your managers have. Current business decisions and strategic thinking championed by many management gurus are deemed useless without a coherent plan, methodology and scientific validation to reach its objectives. We are not referring to trivial problems where there are a limited number of actions that a manager could take with a fairly predictable pattern of what each consequences would be. Rather, at Intelligent Insights International (III) we provide solutions to a complex system with multiple tradeoffs of each alternative based on the management’s direction for their short, interim and long term goals. The following pages are examples that could be achieved through the OR methodology at III.



Agriculture and Harvest Management

Independent agriculture contractors need to optimize their decisions on which farms have to be harvested first by taking into account the limits set by their crew base and machineries. The decisions are not straightforward due to the uncertainties of requests for services, equipment failure, weather and scarcity of resources. The traditional approach requires the site supervisor to report the progress weekly to the operations manager who would in turn schedule the harvesting on a first-come first-served basis. However, this method results in an ad-hoc and a somewhat indecisive planning routine. OR at III will aid the decision maker in:

- ▣ Assigning the type and number of machines to the respective farms.
- ▣ Assigning personnel with different levels of skills depending on the difficulty expected from the respective farms.
- ▣ Projecting a start and finish time of each process of the harvesting.
- ▣ Providing an adjusted schedule when delays occur due to accidents, machine breakdowns, adverse weather, etc.

Automotive Industry

With the increasing number of car models, lead times between customer order and the car arrival at dealerships should be reduced. The reduction can be scrutinized along the process of production and transportation. Many national car companies follow the built-to-inventory model rather than the built-to-order perspective. Their planning process usually takes up too much time from with web like information sharing between sales companies, assembly plants and the headquarters. Imagine that at the start of each month, sales companies generate forecasts for every model. These forecasts then allow the sales teams at the respective headquarters to review the figures with industrial planners to ensure production comply with plant capacities. In parallel, customer orders are sent daily to headquarters, which are subsequently delivered to vehicle plants at a scheduled period (e.g. once a week). At the end of the supply chain, assembly plants performed daily planning and scheduling of their productions. This process is extremely complicated thus hindering car companies from being able to cope as the number of car models, colour options, combination of specs are on the increase. Also, divergent product descriptions and terminologies used by sales team and industrial planners often lead to confusion. There is a need to link the sales forecasts from dealerships directly to assembly plants. However, sales forecasts are far from entirely correct, especially when the objectives of the respective planning processes of sales and industrial departments differs. Using the OR methodology at III, it allows one to resolve these issues, and in turn achieve the following benefits simultaneously:

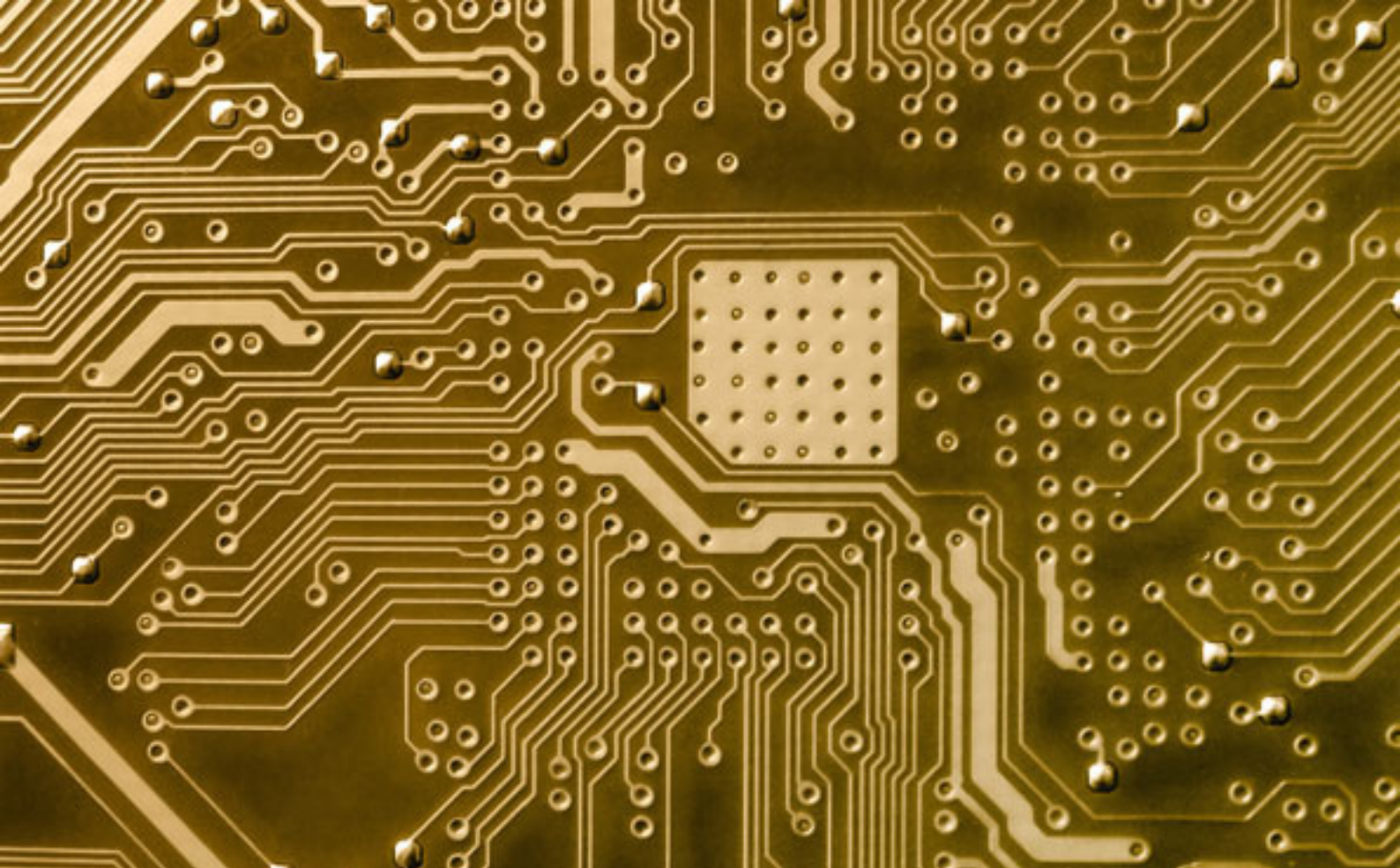
- ▣ Short delivery time, thus allowing the sales team to focus on more profitable product mix.
- ▣ Car inventory levels can be kept low since the waiting time for customers will be shortened.
- ▣ Price discounts can be revised effectively for those models that do not match exactly what the clients' want.

Public Transportation

Public transportation in most developing countries is run by their respective municipalities. For those states relying on the federal government, they are often faced with a crisis of raging public complaints when road capacity goes out of hand while waiting for the slow approval process and other pending priorities of the federal government. This is one of the main reasons for developed countries to adopt a privatization process in their transportation service. A good case is the Berlin Public Transport Company (BVG), which manages approximately 2,500km network, 200 lines with 3,000 stops, a combination of 2,000 busses and trams from 12 depots, with a total of 14 000 employees. How did BVG manage all these? OR is at the core of their operations, which assists in solving combinatorial optimization problems.

No mass transit management can be left without computer-aided planning. Scheduling and handling large amounts of data is difficult, let alone managing the local cost structures and fares, and available tracks and routes. Therefore, OR can be said to assist in the three phases of dispatching, scheduling and planning. Each of these phases caters to different projected horizons, ranging from short to long-term. Multiple objectives are handled with respect to the horizon and phase, such as service expectancy, cost and time. OR at III can handle each of the following:

- Crew Assignment
- Delay Management
- Failure Management
- Depot Management
- Vehicle Scheduling
- Duty Scheduling and Routing
- Network Design
- Line Planning
- Timetabling
- Fare Planning



Technology Investment

When a company needs to decide on which technology to invest in, they usually request quotations and demos from multiple vendors. However, this is for formality sake, in spite of the fact that the decision was already made informally during the meeting. Therefore, many contracts are awarded based on reasons such as how well the supplier “sweet talks” and convinces your purchasing department about his products and services. These had caused many top management personnel to note that they do not know whether their current suppliers are underperforming and undercutting their performance. Also, suppliers that have only marginal performance usually compensate their weaknesses with good salesmanship and interpersonal skills. Therefore, it is important to address these issues and make certain that your existing set of suppliers and purchasing-supplier system is being maximized. Considering the importance of coordination between manufacturers and suppliers, it is imperative for manufacturers to ensure that their existing set of suppliers and purchasing-supplier system is being maximized. To achieve this, a guide is needed to help these manufacturers in selecting only the best potential suppliers that can lead towards developing and implementing a win-win partnership between both parties. Through OR, III can help provide such a guide to your organization. With our customized analytical methods, we aim to accomplish the following objectives for the success of your organization.

- ▣ Improved quality of purchased parts
- ▣ Better delivery time as a result of greater control over your suppliers
- ▣ Tighter coordination of approved suppliers than ever before
- ▣ An evaluation on supplier’s actual performance to deliver rather than their presentation or personal skills
- ▣ Better understanding of the strengths/weaknesses of current suppliers



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Intelligent Insights International (III) is a global consulting practice specializing in business management. We believe that managing is truly an art encompassing a wide range of disciplines unrestricted across all industries. However more often than not, managing becomes an arduous task with numerous problems arising. Here at III, we want to help you to remove those obstacles and present to you a clearer road ahead. Using our expertise in research and analysis, we generate a wealth of innovative ideas that will serve to solve your business needs but above all, impact your firm's performance. For more information on how our expertise can serve your firm, visit our website at www.i-insights.com.