Strategic Operations: The New Method for Marrying Strategic and Operational Silos

Utilizing expert system technology to improve resource allocation and cost-effectiveness

MICHAEL J. McCARTNEY, STEPHEN M. MANNA and ELIZABETH J. McCARTNEY

ABSTRACT

What a hospital board plans to do through strategic retreats is often considerably different from what happens at the operational level. The daily pressures of fighting fires – labour contract changes, increased pressure from overflowing emergency rooms, nursing shortages, increased drug costs and a host of other unexpected changes – mean that operational management is most usually focused on dealing with ever-changing management pressures. Time is very limited by these issues, so strategic plans are difficult to operationalize in this milieu.

The authors propose a new approach to assist healthcare management to marry strategic thinking with operational processes. This new method of strategic operations using expert system software overcomes the issues created by traditional operational silos and provides a radical new approach to healthcare management. This new approach is so nimble and responsive that it can even be used in the midst of daily fire-fighting to take into account changes as they occur. The result is a strategic operations process that is revolutionizing healthcare management.

UNDERSTANDING THE PROBLEM

Compared with other organizations, healthcare organizations are the most complex entities to manage. The organization consists of the hotel business, the restaurant business, materials management, diagnostics, operating room, clinics, and patient care. Regional entities in some jurisdictions often go far beyond this, including home care, dental care, and even ambulance services. Managers must work with independent contractors (physicians and others) who, in addition to being able to significantly affect consumption of resources, often have easy access to the board. In addition, many really bright business executives on the board have increasingly high expectations of healthcare managers. The community expects immediate service without waiting lists. The government expects hundreds – if not thousands – of reports. Chief executives are often criticized for not meeting the government targets that have been set after the government analyzes historical data from

past operations. In addition, in many jurisdictions, government doesn't tell you what your budget is until you are well into the fiscal year.

Health organizations have annual and monthly cycles that must be completed, including a budget cycle, a strategic planning process, a human resource planning process and monthly and quarterly reporting processes. Part of the problem is that organizational silos often become barriers to the smooth transition from strategy to operations.

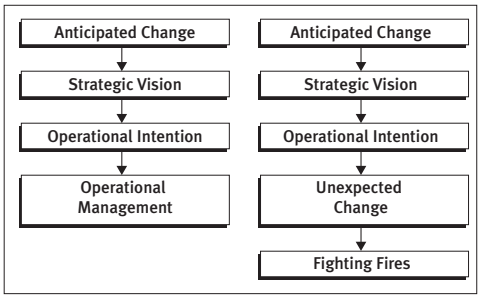
Organizational silos are caused by more than just communication issues; they also occur because of informational mismatches. Finance, for example, works with financial information that is often departmental or relating to the entire organization (such as heat or light); yet clinical areas have information relating to individual patients. Getting these two sources to align can be a major challenge.

The board, being composed of lay people, needs simplified non-technical information, yet enough detail needs to be available for analysts to audit and identify detailed issues. It is only through well-thought-out expert system methodologies that these informational mismatches can be resolved, and the information presented in a way that meets the needs of the entire organization.

People in the finance organizational silo do not have time to explain the detailed accounting process to people in other silos and vice versa. The senior managers who communicate the highlights to the board do not always understand the details that their staff deep in the silos understand. They communicate what they know and what they believe is most important. The organizational silos sometimes mean that important issues and information fall between the cracks. Again, only through well-designed expert systems can the information be made understandable and comparable. Without expert systems, it is almost impossible for these potential issues to be monitored and kept in control.

The board members often don't know what questions to ask, even though they are often keenly intelligent individuals in their own field. They cannot be expected to learn the incredible depth of healthcare issues, so they rely on senior managers and physicians. The expert system results need to display understandable information graphically and visually so that lay board members can quickly grasp the full content and meaning. Similarly, the silos disappear when each area in the organization can understand the information from other areas.

Figure 1



THE NEW METHOD

Understanding the Solution

It has always been a dream of healthcare leaders to be able to link strategic thinking with day-to-day operations. What has been needed is an approach that is simple enough for the intelligent lay board member but effective and detailed enough for the front-line manager to use in daily operations.

The strategic operations method proposed here borrows a resource impact assessment approach from the environmental assessment field. The approach uses detailed impact assessment modelling to facilitate decision support. Clearly there is always more than one solution to a strategic or operational problem. Existing systems have limited or no capability of analyzing and evaluating the options. The capability to quickly and easily analyze and evaluate different options or scenarios is the key to the success of the strategic operations approach.

This approach uses expert systems that require the development of what we call a decision support information warehouse (DSIW). This is distinct from a data repository. A data repository is basically a big file containing data that can be organized into cubes or spreadsheets to accommodate query writing by business data

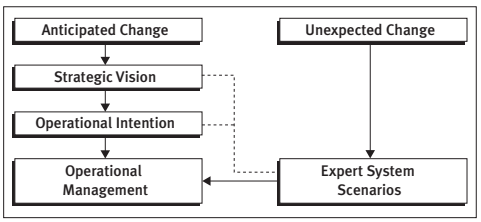
mining software. In comparison, the DSIW is created intelligently to reduce the available mass of data to a series of three-dimensional informational pyramids that use expert system technology to extract the relevant information.

Information from different organizational silos is then combined as appropriate and analyzed. This goes far beyond the normal data mining software analysis process because of the expert system methodologies and complex modelling techniques involved. Using sophisticated expert system impact assessment and modelling methods, the information is used to model hypothetical and probable scenarios that answer detailed strategic questions. Modern expert system software can undertake these analyses in several minutes rather than hours, days or weeks.

The beauty of the approach is that since the informational pyramid is used to align data and answer scenario questions, the drill-down capability remains and detailed questions can be answered, right down to individual patient or individual line item auditing. This intelligent macro-to-micro capability is often a real revelation to most senior managers, who are used to "flying by the seat of their pants" with little to guide them other than a few facts and a lot of intuition.

Often organizational cultural change is needed in order to implement this new way of thinking about the organization. The strategic operations method allows very complex situations to be solved easily, and more importantly, quickly. Resistance to change is often encountered since this approach reduces the need for large numbers of data analysts in the organization.

Figure 2



Case Example

Here is a hypothetical example. Hospital trusts in the United Kingdom were recently faced with the following strategic dilemma. After the government had legislated that waiting lists should be tracked and monitored, it became clear that the voters were not happy with the length of the wait lists, so further legislation was passed giving patients the guarantee that they could be treated within a reasonable time. The hospital trusts had to meet these targets or suffer consequences.

Using expert system modelling technology it was possible to determine how many additional patients would need to be accommodated, what additional resources would be required, what budget would result and what changes in current operations would be needed to meet these new client-centred guidelines.

The following screen captures show some of the various aspects of this analysis from the expert system software.

Figure 3

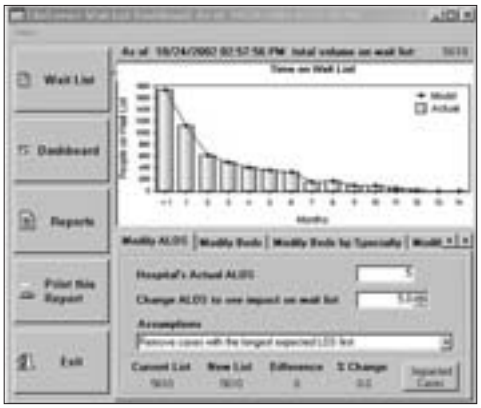


Figure 3 shows the results of the wait list modelling: the wait list has been reduced from 18 months to 15 months. This was achieved by a combination of two approaches. First, the hospitals accommodated the patients on the wait list who needed care most urgently. Then, they accommodated those patients who had been on the list longer than others. The software keeps track of which patients are affected and uses them in the modelling process.

Since demographic and other vital information is evaluated by the expert system for each patient, an expert system patient generator engine (PGE) can simulate the patient using as much information as is available. This means that once the impact module has been called up, it can simulate impact with greater accuracy.

Figure 4

Figure 4 shows the results of the expert system impact modelling. The depth of information available to the user depends on the available information in the organization.With good software such as we were using, the system is able to expertly estimate the details where actual data is lacking by using built-in databases.

The information silos of yesterday no longer need to exist

The impact shown here is that related to the reduced wait list. The impact module has been set to show the additional incremental impact of this strategic move in one year of operations.

Key resources such as beds, operating room time, lab resources, etc. are shown here. In this example we also show diagnostic imaging resources, to give the viewer the feel of the depth of resource impact information that is achievable. Following the impact assessment, these resource impacts can be compared with an inventory of resources available to ensure that capacity exists and that demand has not exceeded maximum levels.

Figure 5

Figure 5 shows the case cost by sectors. In this particular analysis, it was created using a mixture of allocation of general ledger information and actual workload and cost information where available. The cost of the impact may also be shown by the expert system, as can benchmark information from other facilities.

Figure 6

Figure 6 displays the impact on the budget. This split screen shows actual expenditures on the left and what the raised budget due to the change in resource impact will look like on the right. The cost increase in each major department can be shown; program information, if available to the system, could also be displayed as can details of the resource and financial impact.

The four preceding figures have modelled the resources needed across the hospital to achieve a specific strategic plan or goal. The next figures deal with potential solutions to finding the resources needed.

THE SOLUTIONS

Figure 7 shows one possible solution, the result of clinical benchmarking against peer organizations. Potential savings from clinical benchmarking in this case could easily have funded the cost of reducing the wait list.

Figure 7

Figures 8 and 9 show some other solutions – in this case, the results of financial and statistical benchmarking compared against peer hospitals. Financial and statistical tools can automate key productivity analyses, giving healthcare managers the ability to track their hospital's efficiency, effectiveness and productivity over time and against chosen peer hospitals.

Figure 8

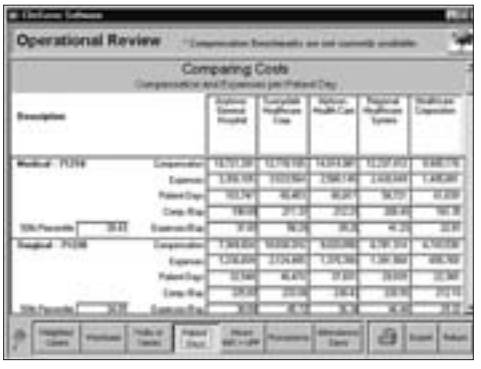
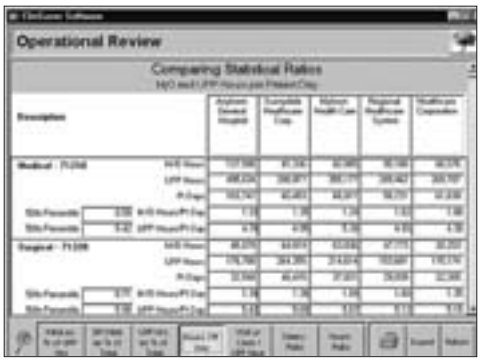


Figure 9



These expert tools can identify whether too many human or physical resources are being used. Healthcare operations can be quickly monitored and corrective action can be taken where operations are out of sync with strategic directions. The results of these expert system analyses provide senior managers with virtually instantaneous alternative operations solutions to their strategic issues.

CONCLUSION

The information silos of yesterday no longer need to exist, given the speed and accuracy of current expert system modelling technology. The key to solving strategic problems using expert systems is to use integrated comprehensive modelling systems that quickly and easily identify alternative solutions. The technology exists to enable you to stay ahead of your strategic challenges.

ABOUT THE AUTHORS

Michael McCartney, BSc, MES, MHSc is President, McCartney Consultants Inc. He is an environmental planner and health administrator with 30 years of working experience in government, hospitals and private industry. **Stephen Manna** is a consultant with McCartney Consultants Inc. and Vice President, Programming ClinSaver Software Inc. Stephen has 10 years of experience in healthcare data analysis and software development with McCartney Consultants Inc. and ClinSaver Software Inc. **Elizabeth J. McCartney**, BScN, MHSc. is Chief Operating Officer, McCartney Consultants Inc. and has more than 20 years experience in the healthcare field as a health consultant and senior health care manager.