The balancing act in hospital performance measurement:
A comparison of UK and New Zealand approaches

Research executive summaries series

Vol 5, Issue 2

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ISSN 1744 - 7038 (online)
ISSN 1744 - 702X (print)
1. Overview of project

This project examines the development and impact of balanced scorecard (BSC) performance measurement in the United Kingdom (UK) and New Zealand (NZ) hospitals, focusing on how such systems work in practice. BSC style performance measurement systems have now been in place in NZ and UK hospitals for several years. This approach emerged from a perceived need for an appropriately balanced performance measurement strategy (broader than a purely financial focus) in order to achieve the full benefits of health sector performance management (see Northcott & Llewellyn 2004). This research is the first empirical study conducted in either NZ or the UK to examine how these BSC performance management approaches work in practice in the public sector, and specifically to support hospital performance management.

While the BSC is well established as a performance measurement tool, it has more recently been afforded a more dynamic role as a strategic management or control system aimed at optimising performance (Kaplan & Norton 1992, 2001 A and B). This strategic management role of the BSC rests on Kaplan and Norton’s (1996) assumption of causal linkages between the selected indicators within in its four dimensions. Without appropriate linkages between leading and lagging performance indicators, any BSC would simply be a multi-dimensional key performance indicator set, rather than a strategic management tool. Effective management and improvement of non-financial indicator results is expected ultimately to enhance financial performance. This research study uses the Granger causality approach (Granger 1969, 1980) to examine whether such causal linkages exist in practice in the NZ hospitals’ BSC and to highlight implications for using the BSC as a strategic management tool. The study also uses interviews with managers and accountants in UK and NZ hospitals to understand the perceived usefulness of BSC performance information in hospital performance management.

2. Objectives

The broad objective of this study was to examine the development and impact of BSC performance measurement in UK and NZ public hospitals. There were three key dimensions to this:

1. An analysis of the NZ and UK policy on hospital performance measurement, tracing the development of BSC use by public hospitals in the two countries and inform our understanding of the NZ and UK operating contexts.
2. An evaluation of whether the design of hospital BSCs can support strategic management via appropriate indicators and cause-and-effect relationships, in accordance with theoretical expectations (Kaplan and Norton, 1996).
3. An examination of whether hospital managers and Ministry of Health observers find the BSC performance information useful.

2.1 NZ and UK policy on hospital performance measurement

In the UK the broad and quite complex Performance Assessment Framework (PAF) (Department of Health 1999) advocated a BSC type approach. Also some hospitals use custom designed BSC frameworks to support internal performance management. There is not a single, systematic BSC framework in use, but rather different approaches influenced by regulatory requirements and by the different healthcare systems in place in England, Wales and Scotland. For example, in England the Healthcare Commission have taken up the underlying principles of the PAF and carry out annual health checks under a performance rating regime that covers both quality of services and the use of resources. The scoring rules for both relate to three aspects: core standards; existing national targets; and new national targets. Performances are judged to be excellent, good, fair or weak.
Responsibility for health care financial management now lies with the Audit Commission who oversee all UK providers. Whether the PAF, health checks and the work of the Audit Commission are considered to be BSC techniques or not be may merely an exercise in language. Although, as discussed below, UK respondents considered the introduction of BSCs to be a discretionary matter for individual hospitals managers, it is clear that the policy intent behind the PAF, health checks and the work of the Audit Commission in the UK and the explicitly labelled BSCs in NZ is very similar. Hence, one way of seeing the situation in both the UK and NZ is that multi–dimensional performance rating regimes are operating in both, albeit only in NZ are these regimes openly modelled on the BSC as understood in the private sector.

In NZ all public hospitals are required to provide performance information to the Ministry of Health according to a relatively simple BSC framework (labelled Hospital Benchmark Information – see Appendix 1). This information is used by the Ministry to monitor and benchmark the performance of all NZ hospitals.

2.2 Exploring BSC cause-and-effect relationships

To evaluate whether the design of hospital BSCs can support strategic management we focused on NZ because, although BSC style performance measurement systems function in both countries, the UK does not systematically use a model based on Kaplan and Norton’s BSC framework. In contrast, NZ hospital benchmark information (HBI) is closely modelled on Kaplan and Norton’s BSC as a four dimensional set of 16 performance measures (see Appendix 1), underpinned by expected cause and effect relationships.

The existence of clear cause and effect relationships between the various performance indicators would, according to BSC theory, improve the usefulness of HBI for the strategic management of NZ hospitals. Our aim was to examine whether such cause and effect relationships did in fact exist. To this end, we obtained more than five years’ worth of quarterly reported performance data (for July-September 2000 to January-March 2006) for the 21 District Health Boards that oversee NZ’s public hospitals.

We developed and tested three propositions in relation to the causal links of performance measures contained within the 21 New Zealand District Health Boards’ hospital balanced scorecards:

- **Proposition one:** the measures contained in the **organisational health and learning**, **process and efficiency**, and **patient and quality** perspectives are drivers of measures in the **financial** perspective.

- **Proposition two:** the measures contained in the **process and efficiency** perspective are drivers of measures in the **patient and quality** perspective.

- **Proposition three:** the measures contained in the **organisational health and learning** perspective are drivers of measures in the **process and efficiency** perspective and the **patient and quality** perspective.

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1 Ralph Kober Associate Professor, Monash University, Australia, joined our research team to assist with this part of the project.
2 See Appendix 1 for the measures included within each perspective.
These three propositions accord with the causal links that Kaplan and Norton (1996) assert differentiate the BSC from other performance measurement systems and allow organisations using the BSC to achieve superior performance. It appears these causal links were expected in the NZ hospitals BSC, as it was noted: ‘ultimately all non-financial indicators should contribute to the results of financial indicators’ (Ministry of Health, 2000). This claim gave rise to Proposition 1. The Ministry further stated that ‘strong linkages exist between indicators for internal process/efficiency and customer satisfaction/quality’ (Ministry of Health, 2000), leading to the development of Proposition 2. Finally, the Ministry claimed that in relation to the developed BSC ‘learning and organisational health ultimately provide a leading indicator of sustainable performance in the other dimensions’, which resulted in the development of Proposition 3.

2.3 Examining the usefulness of BSC performance information

To examine the perceived usefulness of the BSC style performance measurement frameworks, semi-structured interviews were conducted with managers and accountants in eight case study hospitals (four in the UK and four in NZ). The interviews focused on their experiences of compiling and using balanced scorecard performance measurement data.

Further interviews sought the views of relevant and senior Ministry of Health (NZ) and Department of Health (UK) personnel. These focused on the rationale for selecting the indicators included in the hospital BSC.

3. Findings and implications

3.1 The development and implementation of BSC performance measurement systems for UK and NZ hospitals

The research findings reveal that the approach to developing and implementing BSC frameworks has differed in NZ and the UK. In NZ, a standardised BSC framework was designed at the request of the Ministry of Health and imposed upon all hospitals (via their overseeing District Health Boards) as a required performance measurement system. It retained the same format and content – i.e. key performance indicators – from its introduction in 2000, until the completion of this empirical study in June 2007. Data on performance against the BSC’s 16 key performance measures was consistently collected for all hospitals and used to benchmark performance and underpin the Ministry’s requests for targeted improvements by individual hospitals.

In contrast, the BSC has been implemented in UK hospitals in a more ad hoc fashion. There has been no government push from the centre, though several individual hospitals have introduced it because some managers perceived it as helpful in managing individual departmental performance. Therefore, multiple versions of the BSC exist in UK hospitals as managers customise the design to reflect their particular concerns. There may be various scorecards operating in different departments within any one hospital. There is no centralised collection of hospital BSC data in the UK, so it is not used for benchmarking at a national level as it is in NZ.

3.2 Cause-and-effect relationships in the NZ hospitals BSC

Our results appear to lend modest support for proposition one (the measures contained in the organisational health and learning, process and efficiency, and patient and quality perspectives are drivers of measures in the Financial perspective) and proposition three (the measures contained in the organisational health and learning perspective are drivers of measures in the process and efficiency perspective and the patient and quality perspective), with little support for proposition two (the measures contained in the process and efficiency perspective are drivers of measures in the patient and quality perspective). Appendix 2 gives more detail about the causal relationships found.

3 Although this statement by Ministry of Health (2000, p. 6) also refers to the measures within the Organisational Health and Learning perspective as drivers of the Financial perspective measures, these relationships are already being tested under Proposition 1 so are omitted from Proposition 3.

4 However, results from the Performance Assessment Framework do influence the award of external star ratings for Trusts.
The causal relationships, and how and why they arise, require closer examination in future research. However, one key implication that did emerge is that effective staff management is integral to securing improved performance in NZ public hospitals – hardly a surprising finding, but one that perhaps demonstrates the particular importance of the organisational health and learning dimension of the BSC for public sector service providers.

Overall, the findings suggested that many of the expected cause-and-effect links are not consistently found in data reported for the NZ hospitals BSC. This points to possible design problems, in particular regarding the selection of appropriate performance indicators to secure strategic management benefits from the hospital BSC. Organisations may therefore find it useful to validate their BSC system and the assumed causal links within it once operational data becomes available.

3.3 The perceived usefulness of BSC performance information in NZ and the UK

While the implementation of BSC type performance measurement systems in NZ and the UK had the intended aim of improving overall hospital performance, its success in achieving this can be examined from two perspectives: evidence for improvements in key hospital outcome measures, and perceptions of hospital managers and accountants regarding the usefulness of BSC performance data.

In New Zealand, there is little tangible evidence of improved health service quality since the introduction of the BSC-style Hospital Benchmark Information initiative. The high-profile, overarching measure of ‘waiting times for elective procedures’ did improve in 2006, but this appeared to be the result of a ‘waiting list cull’ (Howell, 2007) by District Health Boards (DHBs) rather than any steady improvement in service provision. The NZ Ministry of Health now monitors patient access to elective hospital services using six criteria, the ‘patient flow indicators’, with most DHBs meeting most of these criteria in recent times5.

However, the Ministry of Health’s Health Report on DHBs, which monitors the quality and cost of hospital services against the plans submitted by DHBs, reveals some patchy results. While observing that the overall ‘risks of service delivery non-performance are low’, the report notes ‘room for improvement’ in performance against key DHB indicators6.

In the UK there have been quality improvements. In terms of waiting lists, 18 weeks from referral to treatment is now the expected norm and although regional performances differ7. There is at least indicative evidence that these gains have followed the introduction of multi-dimensional performance measurement regimes.

In regard to how practitioners perceive the value of the BSC the findings of this study suggest that BSC data produced in NZ is not disseminated widely among hospital managers as a decision support tool. Rather, it is considered and responded to primarily at the most senior levels – for example, hospital boards – and viewed as an exercise of political importance rather than managerial relevance at the operational level. This is captured in the following quotations:

Mainly, my job is to explain our HBI results at (hospital) Board level, because I get questioned about areas where we haven’t ranked well against other hospitals. Other than that, this data isn’t really used for day-to-day management.

(Senior NZ hospital manager)

We collect the data as best we can and send it off to the Ministry. But, it’s not like I get asked for the information by our own (hospital) people – they have their own performance measures they’re interested in. This is seen as more of a Ministry box-ticking exercise.

(NZ hospital information manager)

In contrast, where UK hospitals have voluntarily introduced balanced scorecards they are frequently mobilised to support strategic goals and/or ‘grassroots’ level initiatives - for example, reducing absences due to staff sickness at the departmental level. Attitudes

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5 For example, the latest comparison of DHBs table is available at: www.electiveservices.govt.nz/espi/
7 See www.18weeks.nhs.uk/endwaiting/waiting-time-statistics/
towards the usefulness and acceptance of the BSC approach appear therefore to be quite different in the UK. The following quotations from senior UK hospital managers illustrate:

We decided to use the scorecard linked to the delivery of a strategy in the organisation. We started off with balanced scorecards based upon delivery of targets and tried to link the targets with finance as part of the scorecard, and then gradually we decided that the way forward was to have a very clear strategy within the organisation and then build the scorecards around the delivery of the strategy.

The (use of the) balanced scorecard is primarily an organisational decision.... If the Department of Health had said you must adopt a balanced scorecard approach people would have moaned and groaned and might have reluctantly been dragged kicking and screaming to do it.... But, if you actually engage in the organisation where you give people space to influence something ... then generally speaking this has proved to be the most effective way of doing it. Now, I think there’s a lesson to be learned there for the NHS, both in applying evidence based clinical practice, but also evidence based management practice....

This comparison between the NZ and UK experiences of using hospital BSCs is interesting. As a consequence of its central imposition and lack of tailoring to individual hospitals’ performance concerns, the NZ hospitals’ BSC has been generally perceived as a monitoring device. By contrast, among those UK hospitals using the BSC, it is perceived as a more flexible tool that can be applied to specific management concerns. Adapting the BSC to users’ requirements may therefore, aid acceptance of its use and relevance as a management tool.

However, while the UK approach appears to enhance the use of the BSC as a performance management tool, it lacks the consistency and benchmarking qualities achieved by the standardised BSC imposed across NZ hospitals. An emergent theme here is that the BSC can serve dual roles in a health sector context (monitoring and supporting management decision-making), but that these dual roles have differing requirements and may be difficult to synchronize. Further, NZ hospital information managers acknowledged significant disparities in how the BSC information is collected and reported. This is largely due to hospitals’ use of non-standard information systems which raises concerns regarding the comparability of BSC data. It echoes our earlier research findings in the UK, where diverse information systems were perceived as a significant source of reported cost variability.

4. Conclusions

In conclusion, the findings of this research study reveal substantial variation in the content, use and perceived benefits of BSC frameworks among hospitals within and between the UK and New Zealand. Our statistical analysis of the data from NZ’s District Health Boards suggests that very few of the expected cause and effect relationships exist between the BSC performance indicators. This suggests that the intended strategic management aims of the NZ hospitals BSC may not be achieved, since encouraging hospital managers to focus on supposed ‘lead’ indicators (the ‘drivers’ identified in the 3 research propositions tested) will not necessarily produce improvements in the ‘lag’ indicators that measure the achievement of desired outcomes.

This points to possible design problems in the NZ hospitals BSC, in particular regarding the selection of appropriate performance indicators to secure strategic management benefits from the hospital BSC. The NZ and UK evidence discussed here suggests that to improve the practical utility of the BSC, both managers and clinicians must be engaged in dialogue and consensus building to ensure compatibility between goals and measures. Further, instances of quality failure resulting from the under use, overuse or misuse of hospital resources, all of which result in increased healthcare costs, must be the main focus of ongoing monitoring if managers are to work towards reconciling the dual objectives of economy and quality.

Scope for further research:

It is not clear why some associations were detected after certain time lags, but not consistently over time (e.g. the resource utilisation rate data appeared to be related to staff turnover data one quarter prior and three quarters prior, but not two quarters prior). This is an area that warrants further examination in a future study, to obtain a clearer picture of how and why any existing NZ hospitals BSC cause and effect relationships operate.
5. References


6. Further reading


Additional literature


® Dr Necia France was the research assistant on this project.
### Appendix 1: NZ Hospital Benchmark Information (2000-2006)

<table>
<thead>
<tr>
<th>Financial</th>
<th>Process and Efficiency</th>
<th>Patient and Quality</th>
<th>Organisational Health and Learning</th>
</tr>
</thead>
<tbody>
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<td>Resource Utilisation Ratio</td>
<td>Patients’ Overall Satisfaction</td>
<td>Staff Turnover (voluntary)</td>
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<tr>
<td>Operating Margin to Revenue</td>
<td>Performance to Contract</td>
<td>Hospital Acquired Blood Stream Infections</td>
<td>Staff Stability Rate**</td>
</tr>
<tr>
<td>Revenue to Net Funds Employed</td>
<td>Inpatient ALOS* x Patient Admission Rate</td>
<td>Emergency Triage Times</td>
<td>Sick Leave Rate</td>
</tr>
<tr>
<td>Debt to Debt plus Equity Ratio</td>
<td>Percentage Eligible Elective Day Case Surgery</td>
<td>Percentage of Complaints Resolved/Closed</td>
<td>Workplace Injuries</td>
</tr>
</tbody>
</table>

* ALOS = average length of stay
** Staff stability rate = the proportion of the workforce remaining with the organisation two years after their appointment.

Source: Ministry of Health (2000)
Appendix 2: Cause-and-effect relationships in the NZ hospitals BSC

Proposition 1:
Our results suggested a degree of support for Proposition 1 (the measures contained in the organisational health and learning, process and efficiency, and patient and quality perspectives are drivers of measures in the financial perspective). Specifically, we found a causal relationship between the three financial perspective measures and measures contained in the other three non-financial perspectives as follows:

- Operating margin divided by net funds employed appeared to be related to: staff turnover one quarter prior, staff turnover four quarters prior, staff stability one quarter prior, resource utilisation rate one quarter prior, and patient satisfaction rate three quarters prior;
- Operating margin divided by revenue appeared to be related to: staff stability rate two quarters prior, staff sick leave one quarter prior, patient satisfaction rate three quarters prior, and patient satisfaction rate four quarters prior;
- Revenue divided by net funds employed appeared to be associated with the percentage of complaints closed/resolved one quarter prior.

Proposition 2:
In relation to proposition 2 (the measures within the process and efficiency perspective are drivers of measures in the patient and quality perspective) we find only two causal relationships between process and efficiency measures and patient and quality measures:

- Emergency triage rate for category 1 patients (i.e. requiring immediate resuscitation) appears to be driven by performance to contract (two quarters prior).
- Emergency triage rate for category 2 patients (i.e. requiring attention within a target time of 10 minutes) appears to be driven by the inpatient average length of stay multiplied by patient admissions (eight quarters prior).

These relationships appear to suggest that the speed of service provided to emergency patients is improved where hospitals achieve greater operational efficiency. The ‘performance to contract’ measure is the ratio of actual outputs to contracted outputs and reflects how well a hospital is meeting its contracted service output levels. The ‘inpatient average length of stay multiplied by patient admissions’ measure reflects how busy a hospital is based on how many patients it admits and how long (on average) they stay in the hospital. Since high admission rates (c.f. day-case services) and high average lengths of stay are both taken to indicate lower efficiency, this combined measure reflects overall efficiency in patient management. However, the reasons behind the time lags in these apparent relationships require further research in order to better understand the underlying operational drivers at play and eliminate any potentially spurious correlations.
Proposition 3:
We found limited support for Proposition 3 (the measures contained in the Organisational Health and Learning perspective are drivers of measures in the Process and Efficiency perspective and the Patient and Quality perspective) in that some Organisational Health and Learning performance measures did appear to cause two Process and Efficiency performance measures. The specific relationships were:

- Resource utilisation rate appeared to be related to: staff turnover one quarter prior, staff turnover three quarters prior, and staff stability four quarters prior;

- Casemix weighted average length of stay multiplied by patient admission appeared to be related to: staff turnover one quarter prior, staff injury rate one quarter prior, and staff injury rates three quarters prior.

We found no instances of an Organisational Health and Learning performance measure driving any of the Quality and Patient performance measures.