

# Applications of the balanced scorecard for strategic management and performance measurement in the health sector

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**Abstract.** In order to attain a useful balanced scorecard (BSC), appropriate performance perspectives and indicators are crucial to reflect all strategies of the organisation. The objectives of this survey were to give an insight regarding the situation of the BSC in the health sector over the past decade, and to afford a generic approach of the BSC development for health settings with specific focus on performance perspectives, performance indicators and BSC generation. After an extensive search based on publication date and research content, 29 articles published since 2002 were identified, categorised and analysed. Four critical attributes of each article were analysed, including BSC generation, performance perspectives, performance indicators and auxiliary tools. The results showed that 'internal business process' was the most notable BSC perspective as it was included in all reviewed articles. After investigating the literature, it was concluded that its comprehensiveness is the reason for the importance and high usage of this perspective. The findings showed that 12 cases out of 29 reviewed articles (41%) exceeded the maximum number of key performance indicators (KPI) suggested in a previous study. It was found that all 12 cases were large organisations with numerous departments (e.g. national health organisations). Such organisations require numerous KPI to cover all of their strategic objectives. It was recommended to utilise the cascaded BSC within such organisations to avoid complexity and difficulty in gathering, analysing and interpreting performance data. Meanwhile it requires more medical staff to contribute in BSC development, which will result in greater reliability of the BSC.

**What is known about the topic?** Although there was initially a low perception of the BSC within the health sector, over the past decade interest in BSC utilisation has been growing among health service providers around the world in both developed and developing countries. Some papers have described the development or diffusion of the BSC in health settings. Some examples of BSC utilisation for private and public hospitals have been presented in the literature. However, the necessity of a comprehensive review of published articles in the health area is crucial in order to derive the most appropriate way to design and implement the BSC in the health sector in terms of perspectives and KPI.

**What does this paper add?** This paper has analysed articles on the BSC in the health sector published over the last 10 years. The analysis is based on the following items: BSC generations; BSC perspectives; BSC indicators; auxiliary tools. This paper gives an insight into the situation of the BSC in the health sector over the past decade and affords a generic approach of BSC development for health settings in terms of the four items above.

**What are the implications for practitioners?** This paper can be beneficial for managers and decision makers of all healthcare organisations. It can help them to change their thinking about performance assessment and to have a structural BSC approach for performance measurement and strategic management in healthcare. It presents an insight on designing BSC to help managers adopt appropriate performance perspectives and KPI. In addition, it introduces the cascaded BSC, which is useful for large health settings with too many KPI. It also presents all BSC generations to help healthcare managers utilise proper BSC based on their own requirements and strategic objectives.

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## Introduction

In recent years, there has been an increasing trend toward designing and implementing the Balanced Scorecard (BSC)

as a performance measurement tool in the health sector. Hospitals have started to utilise performance measurement systems,<sup>1</sup> but they have been tardy to develop and

implement formal performance and productivity measurement systems.<sup>2</sup>

The primary problems that have inhibited hospitals from making satisfactory progress in the performance and productivity systems are: culture, organisation and managerial practices; these are inconsistent with competitive business, including operating practices that are not cost driven.<sup>3</sup> According to Zelman *et al.*, some specific reasons why hospitals have not been active or successful in this area are as follows:<sup>4</sup>

- (1) Members of hospital boards have little experience of competitive environments
- (2) Lack of employee participation, particularly among doctors
- (3) Provided services are difficult to measure

Among medical staff, staff relations and quality of care are the most important attributes that contribute to the overall performance of a hospital;<sup>3</sup> however, they are difficult to measure, interpret and compare with other healthcare organisations.<sup>4</sup> In line with the changing demands on business due to many internal and external changes in healthcare industry, it is argued that the key to achieving the targeted level of performance is to adopt new approaches of performance measurement.<sup>5</sup> BSC is fundamentally a customised performance measurement system that looks beyond the traditional financial measures and is based on organisational strategies. Although the health sector has been implementing performance measurement systems for a long time,<sup>6</sup> in recent years application of the BSC as a management and measurement approach has grown dramatically. According to Banchieri *et al.*, who considered all of the scientific publications on the BSC during the past decade, of all the articles that specified 'sector' in their abstract or title, 33% applied to the health sector. This was followed by the public and education sectors, which accounted for 18 and 11% of the articles respectively.<sup>1</sup>

Hence, the objective of this survey was to provide an insight into the present state of the BSC in the health sector and to identify a tailored approach of BSC development for health settings with a specific focus on BSC perspectives and key performance indicators (KPI).

### The BSC

In 1992, Dr Robert Kaplan and Dr David Norton introduced the BSC as a performance measurement tool.<sup>5</sup> It is also a strategic management tool for translating an organisation's strategies into operational terms. The BSC is a conceptual tool<sup>7</sup> and its four perspectives can be modified; its flexibility is part of its attraction.<sup>8</sup>

Accordingly, the BSC is a performance measurement tool that can be customised for every organisation and utilised as a strategic management framework to align an organisation's strategies and objectives. Implementing the BSC requires that executives:<sup>9</sup>

- Develop coherent strategies in order to achieve the organisation's mission
- Develop a set of KPI to monitor the organisation's performance and strategic alignment

Many organisations use the BSC merely as a performance measurement tool. For instance, 20 (69%) of the cases we

reviewed used the BSC first generation which is only able to measure the performance. However, it is necessary to track strategic alignment as there is usually deviation between an organisation's goals and executive actions; this happens because executive actions are affected by variable environmental factors such as politics and economic conditions. By defining long-term and short-term goals, organisations will be able to measure their performance and track their strategic alignment. It helps directors to find out what the organisation's current situation is, and how it is supposed to be; subsequently they can adapt appropriate strategies to meet deviation between the organisation's goals and executive actions.

### BSC generations

Three different statements of BSC evolution exist in the literature.<sup>10–12</sup> BSC evolution can be divided into three stages known as three BSC generations. Each generation is distinguished by its method of utilising performance perspectives and KPI to reflect an organisation's performance and strategies. The first generation of BSC combines financial and non-financial indicators under four traditional perspectives: financial, customer, internal business process and learning and growth.<sup>12</sup> The BSC first generation, also known as traditional BSC, includes KPI that are only proper for performance measurement. This generation of the BSC is relatively easy to develop and implement.

The second generation of BSC emphasises cause and effect relationships among measures and strategic objectives.<sup>11</sup> It has become a strategic management tool, which utilises a strategy map to reflect the linkage among measures and strategies. In fact there is a formal linkage of strategic management and performance management that is emphasised by the second generation of BSC.<sup>10</sup>

Lawrie and Cobbold argued that the third generation of BSC is about developing strategic control systems by incorporating destination statements and optionally two perspective strategic linkage models.<sup>12</sup> They used 'activity' and 'outcome' perspectives instead of the four traditional perspectives. Speckbacher *et al.* defined the third generation of the BSC as a second generation of the BSC that additionally implements the organisation's strategies by defining its objectives, action plans and results, and by linking incentives to BSC measures.<sup>11</sup> Miyake stated that the third generation of BSC derives from the concept of the strategy-focussed organisation.<sup>10</sup> The view of Speckbacher *et al.* is accepted as the dominant view in the literature.<sup>11</sup>

### Cascaded BSC

In order to avoid the complexity and difficulty of performance measurement using the BSC, Kaplan and Norton suggested that a standard BSC should not exceed five KPI for each perspective within a medium-sized organisation.<sup>8</sup> However, some organisations are substantially large (e.g. national healthcare organisations) and comprise numerous business units and a large number of KPI is required in order to measure their total performance. There are two options in this situation:

- (1) Group some of the KPI together into subcategories
- (2) Create a new lower-level scorecard

The first option results in having too many subcategories, which makes it difficult to analyse and interpret the collected data. The second option overcomes this weakness as the processes of collecting, analysing and interpreting of the performance data will be accomplished separately in different units. In fact, instead of having one complex BSC for the whole organisation, each business unit will have its own specific BSC. Accordingly, staff in different business units will each work with their own BSC. In order to attain the total performance situation of the organisation, performance information from all business units should be linked together. Hence, there will be one top-level BSC, which is linked to other detailed BSC of different units. Such a structure of the linked BSC is called ‘cascaded BSC’, which involves more people in the processes of designing and implementing the BSC.

### BSC in the health sector

Although there was initially a low perception of the BSC within the health sector, over the past decade interest in the BSC has been growing among health service providers around the world in both developed and developing countries.<sup>13</sup> According to the

literature, there is a diversity of reasons for development and implementation of the BSC in the health sector. Major reasons are presented in Table 1, which highlights a set of significant reasons for BSC implementation in the health sector, from improved performance measurement and reporting to organisational integration. In an extensive review, Zelman *et al.* indicated that the BSC has been introduced across all health service areas including:<sup>4</sup>

- Hospitals
- University medical centres and health departments
- Pharmaceutical care
- Health insurance companies

Not only has the BSC been utilised for strategic management at the organisational level, but it has also been used within health setting for assessment of health services, improvement projects, accreditation, clinical pathways and performance measurement across a number of hospitals.<sup>4</sup> The first article on BSC in the health sector was published in 1994;<sup>4,21</sup> it argued the necessity for continuous quality improvements in the health setting.<sup>22</sup>

**Table 1. Some examples of documented reasons for implementation of the balanced scorecard (BSC) in the health sector**

| Authors                             | Organisation                                  | Reason   |
|-------------------------------------|---|--|
| Aguilera and Walker <sup>14</sup>   | St Vincent's Private Hospital, Australia      | The BSC was initially introduced in the nursing directorate as a framework for improving clinical governance in order to achieve better outcomes for patients and staff. Due to the success of this trial, it was later expanded across the whole hospital.  |
| Bloomquist and Yeager <sup>15</sup> | Emory Healthcare in Atlanta, USA              | They had a structural transition from independent units (three hospitals and two faculty practices) to an integrated healthcare system. They utilised the BSC in order to assist in generating a unified system to reach successful transition.  |
| Chang <i>et al.</i> <sup>16</sup>   | Mackay Memorial Hospital, Taiwan              | They needed to use best practice business tools to help them take a more strategic approach that would differentiate their services and attract more business, and that would also improve communication and collaboration between all levels of staff and key stakeholders. In addition, their board requested an annual performance report that would provide a more comprehensive view of the organisation's performance in fulfilling its mission. |
| Garling <sup>17</sup>               | Children's Health Systems, USA                | With an upcoming major capital expansion, along with a recognition that the organisation was structured by region and health practice with competing agendas and resource demands, executives at Nemours Children's Health System in the USA decided to unify the organisation around 'One Nemours'. Critical to this transformation was their adoption of the BSC to help align and strengthen the organisation.                                      |
| Gottlieb <sup>18</sup>              | Faulkner Hospital, USA                        | The BSC was implemented to help them have a source of reliable information on performance. They also intended to address several major challenges including nursing shortages and ensuring that all patients, regardless of socioeconomic status, received top-quality care.   |
| Aidemark and Funck <sup>19</sup>    | Högland Hospital, Sweden                      | The BSC was introduced as a management tool to combine financial control and quality improvement, along with the development of clinical staff competence. It was initially introduced in 1997 as a 2-year trial but continued because of the success of the trial.  |
| Marr and Creelman <sup>20</sup>     | The Northumbria Healthcare NHS Foundation, UK | They were looking for a new and powerful tool for sharpening their strategic formulation capabilities, to ensure they continued to be a high-performing healthcare provider.   |
| McDonald <sup>13</sup>              | Hunter Area Health Service, Australia         | (1) They needed to find out how the implementation of their strategic plan (which won a state award) will make a difference.<br>(2) They needed to show to the community that they were getting value for the hospital's taxpayer funded (AUSS\$1 billion per annum) services.   |
| McDonald <sup>13</sup>              | St Mary's/Duluth Clinic Health System         | They utilised the BSC after finding that traditional methods of healthcare strategy formulation (for example, extensive consultation resulting in a complex detailed strategic plan) did not work and they needed to adopt a new approach from outside of healthcare.  |

The BSC has been used by various healthcare organisations, and it can be customised to reflect each system's performance efficiently. Several papers have described the development or diffusion of the BSC in health settings;<sup>4,19,23</sup> many examples of BSC, like measurement systems for private and public hospitals, have been presented in the literature.<sup>24-26</sup> Hence, the necessity of a comprehensive review of published articles in the health area is crucial in order to derive the most appropriate method to design and implement the BSC in the health sector.

Although there is an increasing trend toward performance measurement in healthcare in the last 15 years, some generic comments can be made in this area:<sup>13</sup>

- Many healthcare performance measurement systems have a specific focus on performance measurement and often do not reflect the organisation's strategies and progress toward achieving these strategies.
- They often do not have a clear cause and effect relationship between various components of what is being implemented and measured.
- Some healthcare BSC include an excessive number of performance measures, which makes it difficult to implement the BSC within the entire organisation.

In a survey by Pink *et al.* of selecting and utilising the BSC KPI the following results were obtained:<sup>27</sup>

- Flexible BSC KPI should be selected as they reflect the current performance of the organisation in terms of executive actions while these actions are variable over time.
- In the case of lack of data, some KPI should be integrated to reduce the cost of measurement.
- Data quality should be a major concern and needs to be addressed for credibility.
- Benchmarking is valuable when the gathered data is reliable and it often leads to a fresh perception that something needs to be changed or improved.
- An experts' advice is not optional, it is essential to consult with respective experts; for example, directors and clinicians who have reliable data.
- Data linkages should be made early as it would be more difficult after gathering too much data.

Some healthcare personnel have a substantial affiliation for measurement-oriented decision making as it underlies their occupation.<sup>28</sup> Nevertheless, they like to control the measurement and use it inappropriately, for instance, by ignoring risk adjustment if comparing different clinics.

### Research method and findings

The first phase in this research was to collect and identify worthwhile articles and reports regarding the BSC in healthcare, published over the last 10 years. We explored the following databases to cover leading journals on performance measurement and the BSC in the health area:

- Science direct
- Springer
- Emerald
- Scopus
- Google scholar

After an extensive search and filtration based on publication date and research quality (method), 87 articles published during the past decade were found on the BSC area. Of the 87 articles identified, 29 (33%) were about the BSC implementation in the health sector. It shows a growing tendency to investigate implementation of the BSC in the healthcare setting over the last 10 years. In the second phase, identified articles were categorised and analysed (Table 2). The following four perspectives were identified for analysing each article: BSC generation, BSC perspectives, BSC indicators, and auxiliary tools. The analytical report is summarised in the following sections.

Table 2 shows a growing tendency for application of the BSC in the health sector over the past decade. It indicates that the BSC is accepted as the best-practice business tool to help healthcare organisations do performance measurement and strategic management.

#### *BSC generations*

In 20 out of 29 reviewed articles (69%), the first generation of the BSC was implemented. This represents a major tendency of utilising the traditional BSC in the health sector during the past decade. According to definitions of the BSC generations stated in the third section, the main reason for high usage of the BSC first generation is that it is easy to implement and entails low cost of data collection, data analysis and interpretation of results. Table 2 shows that 5 cases out of 29 reviewed articles (17%) used the second generation of the BSC. The strategic management by this generation was implemented for the first time by Urrutia and Eriksen in 2005.<sup>41</sup> Table 2 shows that implementing an organisation's strategies using the BSC third generation is accomplished for the first time in a healthcare sector in 2006. As can be seen, 4 cases out of 29 reviewed articles (14%) used the third generation of the BSC. It implies that in recent years there has been a growing tendency to perform strategic alignment and strategic management in the healthcare sector using the BSC.

#### *BSC performance perspectives*

Based on its characteristics, every organisation may identify different BSC perspectives to achieve the best reflection of its strategies. Kaplan and Norton stated that in spite of presenting four perspectives in the main BSC pattern, organisations may add other perspectives as needed.<sup>8</sup> Table 3 shows a summary of BSC perspectives utilised in the reviewed articles.

The range of BSC perspectives utilised in the reviewed articles is between three and six perspectives. In 13 of the 29 articles analysed (45%), organisations preferred to apply the four traditional BSC perspectives. They only changed the original name of BSC perspectives in some cases in order to make them customised for their own organisation.

The principal concern of healthcare organisations should be customers and providing services based on their mission and goals.<sup>56</sup> Nevertheless, in 5 of the 29 reviewed articles (17%) there is no perspective related to customer perspective; it represents that occasionally health outcomes for patients have not been adequately considered. In a study conducted by Gurd and Gao it was stated that in 50% of the 22 cases studied there was no customer or patient perspective to be set in the high level of the BSC.<sup>23</sup> The customer perspective in the reviewed articles has



**Table 2. Classification scheme of the reviewed articles**

BSC, balanced scorecard; CHC: community health centres; CPR, computer-based patient record; KPI, key performance indicator; NHS, National Health Service; PVA, Product Value Analysis; QFD, quality function deployment; RADAR, results, approach, deployment, assessment, review; SWOT, strengths–weaknesses–opportunities–threats involved; UML, unified modelling language; XML, extensible markup language

| Authors                                     | Organisation   | BSC generation | Perspectives   | No. of perspectives | No. of KPI | Auxiliary tools                          |
|---|--|----------------|--|---------------------|------------|--|
| Protti <sup>29</sup>                        | NHS Executive (CPR recognition program), UK  | I              | Uncertain  | –                   | Uncertain  | –  |
| Chang <i>et al.</i> <sup>30</sup>           | NHS organisations, UK  | I              | Health improvement; fair access; effective service delivery, health efficiency; patient experience of the NHS; outcomes of the NHS | 6                   | 49         | –  |
| Biro <i>et al.</i> <sup>31</sup>            | Veterans Healthcare, USA   | I              | Quality, access; customer satisfaction; performance; efficiency  | 5                   | 18         | –  |
| Radnor and Lovell <sup>32</sup>             | Bradford health action zone, UK  | I              | Client (government and users); learning and growth; internal process; cost   | 4                   | 29         | –  |
| Gumbus <i>et al.</i> <sup>33</sup>          | Bridgeport hospital (part of the Yale New Haven health system), USA                                    | I              | Share growth; quality and process improvement; organisational health   | 3                   | 17         | Capital budget matrix score              |
| Radnor and Lovell <sup>34</sup>             | Bradford health action zone, UK  | I              | Client (government and users); learning and growth; internal process; cost   | 4                   | 30         | –  |
| Huang <i>et al.</i> <sup>35</sup>           | St Martin de Pores hospital, Taiwan  | I              | Business processes; financial; customer  | 3                   | 9          | 4-point Likert-type scale, market survey |
| Ten Asbroek <sup>36</sup>                   | Dutch government, Ministry of Health, Welfare and Sport, Netherlands                                   | I              | Financial; consumer; internal business; innovation   | 4                   | 20         | Ladonde model                            |
| Kunz <i>et al.</i> <sup>37</sup>            | Medical institute of Informatics, Biostatistics and Epidemiology, Charité-University Medicine, Germany | I              | Patient; social; financial; innovation; process  | 5                   | Uncertain  | Java; UML;XML                            |
| Karra and Papadopoulos <sup>38</sup>        | The Agenion Hospital of Thessaloniki, Greece   | I              | Internal process; learning and growth; stakeholder (customer); management (financial)  | 4                   | 16         | SWOT; PVA; QFD                           |
| Kumar <i>et al.</i> <sup>39</sup>           | Singapore Hospital, Singapore  | I              | Customer; finance; process; learning and growth  | 4                   | 8          | –  |
| Smith and Kim <sup>40</sup>                 | Summa health system, USA   | I              | Quality; service; employee worklife; financial; business growth  | 5                   | 23         | –  |
| Urrutia and Eriksen <sup>41</sup>           | Benito Menni Health Centre, Spain  | II             | Patients; internal process; financiers and/or political body; formation and growth; environment; mission                           | 6                   | 30         | –  |
| Van de Wetering <i>et al.</i> <sup>42</sup> | (A public hospital in Melbourne), Australia  | I              | Clinical business process; patient; quality and transparency; information systems  | 4                   | 12         | –  |
| Peters <i>et al.</i> <sup>43</sup>          | Ministry of Public Healthcare, Afghanistan   | III            | Patient and community; staff; capacity for service provision; service provision; financial system; overall vision                  | 6                   | 29         | –  |

(continued next page)

Table 2. (continued)

| Authors                                 | Organisation   | BSC generation | Perspectives   | No. of perspectives | No. of KPI | Auxiliary tools   |
|---|--|----------------|--|---------------------|------------|---|
| Schmidt <sup>44</sup>                   | South-west Yorkshire mental health, UK   | III            | Clinical risk; finance; service modernisation; workforce   | 4                   | 23         | RADAR logic   |
| Chen <i>et al.</i> <sup>45</sup>        | Chinese and Japanese Hospitals, China and Japan                                    | I              | Financial; internal business processes; customer; learning and growth  | 4                   | 19         | —   |
| Coop <sup>46</sup>                      | Otago district health board, New Zealand   | I              | Financial; clinical quality; productivity; learning and organisational health  | 4                   | 21         | —   |
| Gonzalez <i>et al.</i> <sup>47</sup>    | Spanish health system, Spain   | II             | Health systems; patients; internal process; support  | 4                   | Uncertain  | —   |
| Radford <i>et al.</i> <sup>48</sup>     | Federally funded CHC in North Carolina, USA  | II             | Access to care; financial performance; human resources; utilisation and productivity   | 4                   | 19         | —   |
| De Toni <i>et al.</i> <sup>49</sup>     | Azienda per i Servizi Sanitari no. 1 and Associazione Temporanea di Impresa, Italy | I              | Financial; final consumer/customer; facilities; learning and growth  | 3                   | 25         | —   |
| Josey and Kim <sup>50</sup>             | Barberton Citizens Hospital, US  | I              | People; service quality; finance; growth   | 4                   | 27         | RADAR logic   |
| Rabbani <i>et al.</i> <sup>51</sup>     | Private tertiary care hospital, Pakistan   | I              | Financial; internal business process; human resource; patient satisfaction   | 4                   | 20         | Delphi method   |
| Kollberg and Elg <sup>52</sup>          | Public healthcare organisations, Sweden  | I              | Financial; process; employees; innovation and development; customer  | 5                   | 25         | —   |
| El-Jardali <i>et al.</i> <sup>53</sup>  | 52 selected hospitals, Lebanon   | II             | Clinical utilisation and outcomes; financial performance and condition; system integration and human resources; patient satisfaction | 4                   | 21         | Delphi method   |
| Grigoroudis <i>et al.</i> <sup>24</sup> | Healthcare organisations, Greece   | I              | Financial; internal business processes; customer; learning and growth  | 4                   | 24         | Multi-Criteria Decision Analysis and Utilities Additives STAR |
| Wu and Kuo <sup>54</sup>                | Uncertain  | II             | Financial; internal business processes; customer; learning and growth  | 4                   | 38         | —   |
| Chen <i>et al.</i> <sup>55</sup>        | An academic medical centre, Taiwan   | III            | Finance; administration; admission performance; quality of care  | 4                   | 9          | —   |
| Lovaglio and Vittadini <sup>26</sup>    | Territorial context of the Lombardy region, Italy                                  | III            | Human capital; patient satisfaction; clinical process; economy   | 4                   | 21         | Path modelling  |

been represented by synonyms such as patient, people, community, consumer and user. Among these titles, the existence of a perspective as ‘community’ might be to some extent ambiguous. In many public healthcare organisations, especially at national level, defining customers who receive services is difficult as they consider the society as a whole.<sup>23</sup> Accordingly, the experts have claimed that the emphasis for public healthcare must be changed from ‘customer or patient satisfaction’ to ‘community’.<sup>57</sup> ‘Community’ comprises citizens, high-risk groups, healthcare providers and policy makers. Hence, using ‘community’ as an independent perspective of the BSC in healthcare organisations is appropriate.

In 12 of the 29 reviewed articles (41%) there was no ‘learning and growth’ perspective. This shows an omission in recent studies on the BSC in healthcare. Kaplan and Norton stated that ‘learning and growth’ perspective includes the skills and capabilities that make it possible to encourage and reach perfection in the other three BSC perspectives.<sup>8</sup> Speckbacher *et al.* concluded that more than 30% of BSC users do not include ‘learning and growth’ in their perspectives; it is not because of low recognition levels of this perspective but rather the difficulty of identifying relevant KPI for the ‘learning and growth’ perspective.<sup>11</sup> Kaplan and Norton admitted this neglect is disappointing as one of the most important goals of implementing the BSC is

**Table 3. Utilisation of the balanced scorecard perspectives**

| Perspective   | n  | %   |
|---|----|-----|
| Customer  | 24 | 83  |
| Learning and growth   | 17 | 59  |
| Internal business processes   | 29 | 100 |
| Financial   | 24 | 83  |
| Other (health improvement, fair access, effective service delivery, health efficiency, outcome, mission, quality, share growth, process, environment) | 10 | 34  |

to encourage the progress of personal and organisational capabilities.<sup>8</sup>

Regarding 'internal business processes' an organisation can execute two important parts of its strategy:<sup>9</sup>

- (1) Producing and delivering the value proposition for customers.
- (2) Improving processes and decreasing costs for the efficiency of financial perspective.

All 29 reviewed cases utilised 'internal business processes' in their BSC, which represents the importance of this perspective in the health sector. Internal business processes in studied cases of this review were introduced by different titles such as efficiency, utilisation and productivity, system integration and service provision. The BSC integrates 'patient satisfaction', 'safety and health', 'productivity' and 'innovation' processes into the 'internal business processes' perspective. This is a difference between the BSC and traditional performance measurement systems that focus on the processes of delivering services to present customers.<sup>8</sup> The majority of the performance indicators in the BSC are also covered by the 'internal business processes' perspective. The aforementioned content can be considered as a reason for the importance and high usage of the 'internal business processes' perspective in the BSC.

Financial perspective for a non-profit organisation represents how an organisation achieves its goals in the context of cost reduction.<sup>58</sup> Thus, the 'financial' perspective, with the intention of cost reduction and maximising efficiency and utilisation, was found in most reviewed cases.<sup>42,43,48,52,55</sup> Improvement in efficiency is a limited perspective in the healthcare industry as practically there is a necessity for equilibrium between efficiency and fairness, and balance between cost, quality, access and consumer choice.<sup>21</sup> This is a substantial difference between the healthcare industry and other existing industries. Twenty-four cases out of 29 reviewed articles (83%) included financial perspective in their BSC. This indicates that financial perspective is a matter of concern even in non-profit healthcare organisations.

### BSC KPI

The KPI utilised in all 29 reviewed articles were investigated to provide an insight into BSC performance indicators. In order to identify the most desirable BSC KPI for an organisation, we need to consult with respective experts and directors inside the targeted organisation as they are aware of strategic objectives. Regarding the number of BSC performance indicators, the main problem is the complexity and cost of measurement, analysis and

interpretation processes.<sup>23</sup> In order to overcome this problem, Kaplan and Norton recommended that the BSC should not exceed four or five KPI for each perspective in a medium-sized organisation.<sup>8</sup>

The small number of BSC KPI is also an obstacle to reflecting all strategies and measuring the whole organisation's performance. Therefore, a tailored BSC should be able to reflect all strategies by utilising as few KPI as possible. The highest number of BSC perspectives in the reviewed articles was six (Table 2). Accordingly, based on Kaplan and Norton's suggestion regarding the optimum number of BSC KPI, an overall number of six BSC perspectives should result in a total number of 30 KPI or less.<sup>8</sup> The 29 reviewed articles included a wide range of 8–49 KPI for each BSC, with 12 of 29 (41%) articles exceeding the maximum number of KPI suggested by Kaplan and Norton (Table 2). After an investigation of these 12 cases, it was found that all were basically large organisations with numerous departments (e.g. national health service organisations). Obviously such organisations need more KPI to cover all of their strategic objectives even after integration of the overlaying KPI. As already mentioned, cascaded BSC is useful for such large organisations.

### Auxiliary tools

Mathematical, managerial and programming methods are commonly used as auxiliary tools to facilitate performance measurement in terms of data analysis. Eleven of the 29 reviewed articles (38%) utilised auxiliary tools to make their BSC more efficient and reliable. Some used mathematical methods such as Multi-Criteria Decision Analysis and Utilities Additives STAR whereas others used managerial methods such as RADAR and Quality Function Deployment. Programming methods were also used such as unified modelling language (UML), extensible markup language (XML) and Java. Most of the cases (62%) did not combine any auxiliary tools with the BSC as their purpose was merely to create an ordinary BSC for performance measurement in the health sector. Other auxiliary tools that were occasionally integrated with the BSC were: strengths–weaknesses–opportunities–threats involved (SWOT), Delphi and path modelling. According to the literature, for developing the BSC auxiliary tools are basically useful in selecting and ranking the KPI. When there is a large number of verified KPI, the analytic hierarchy process (AHP) method is useful in order to select the best alternatives among the KPI and to rank them precisely.<sup>59</sup>

### Uniqueness of the BSC in the healthcare sector

To make the current survey more comprehensive, the uniqueness of the BSC in the healthcare sector was investigated and results presented in Table 4.

Table 4 highlights the possible ways in which the BSC can assist to meet existing healthcare challenges. It shows that the BSC is a useful managerial tool for performance measurement and strategic management in the health sector. Furthermore, it has been widely reported that if the BSC is used correctly by innovative and skilled management teams, it can play a critical role in helping healthcare organisations to fulfil their mission and deliver outstanding health services to their customers and meet their expectations in a rapidly changing world. However, it should be noted that the BSC is not a miracle cure for all deficiencies.

**Table 4. Healthcare challenges and the possible roles of the balanced scorecard (BSC)**

| Healthcare challenges  | Some ways the BSC can assist  |
|--|---|
| There is a wide range of stakeholders including medical staff, patients, communities, national health departments, regulatory bodies, as well as a range of other government departments (e.g. boards and universities).   | All stakeholders are involved in the BSC development so there is diverse views and comprehensive partnership in the performance measurement. Stakeholders can be included in the BSC in some ways, for instance, as a perspective (patients, community, partners, staff), as an objective, as an initiative, as an indicator. Stakeholders can monitor progress through BSC performance reports.  |
| To make sure that the limited resources are available in an environment of rapidly growing costs (e.g. new expensive medicine and medical technologies) and are allocated moderately and used effectively in the whole organisation.   | Financial indicators of the BSC are usually made up of effective resource usage and appropriate profitability. The strategy map indicates the investment priorities. Tracking the strategic alignment through the BSC can help organisations to identify and resolve cost overruns and inefficient execution of strategic initiatives. Organisations can recognise their performance drivers and be more efficient in using the limited resources; it will be obtained by evaluating the impact of execution of the strategic initiatives on achievement of the BSC objectives. |
| To meet growing requests of the patients whilst they update their medical knowledge through various media.   | By considering the 'customer perspective' as the top priority of the strategy map, the BSC's focus will be more on this perspective, so customers' expectations can be met. The mentioned challenges can be highly ranked as a BSC indicator within the 'learning and growth' perspective; it will generate a motivation in order to resolve these issues.  |
| In some health settings, there are major deficiencies of qualified personnel. There are also significant issues with ageing of the healthcare staff.   | Whereas performance reporting and monitoring is an integral part of the BSC, performance data across all BSC perspectives can be received and compared with the targets. Subsequently all performance deficiencies can be recognised and be helpful for decision making within the organisation.  |
| Health settings have traditionally collected large amounts of data. However, these data are often in separate databases which are not able to be integrated or processed. Furthermore, these data are often not used in order to help in decision making. For instance, a recent audit in an Australian health setting revealed the existence of over 200 databases that were not being used for care improvement. |   |

## Research findings and conclusions

The present survey investigated 29 selected articles for design and implementation of the BSC in the health sector. The main attributes of the BSC were reviewed, including generations, perspectives and indicators. Auxiliary tools were also analysed for more comprehension. This survey provides an insight into the current status of the BSC in the health sector and identifies a tailored approach for BSC development in health settings in terms of perspectives, indicators and generations. The findings of this survey are as follows:

(1) All 29 investigated cases included internal business processes in their BSC. This indicates the importance of the performance perspective in the health sector. The results show that the comprehensiveness of this perspective causes it to cover the majority of KPI, and this was specified as the reason for the high importance and usage of the BSC.

(2) In 12 of the 29 reviewed articles (41%) the BSC exceeded the maximum number of KPI suggested by Kaplan and Norton.<sup>8</sup> After investigation of these 12 cases, it was found that all were basically large organisations with numerous departments. Such organisations need more KPI to cover all of their strategic objectives even after integration of the overlaying KPI. The cascaded BSC is a useful form of the BSC to facilitate performance measurement and strategic management processes within such large organisations.

(3) In 20 of the 29 reviewed articles (69%), the first generation of the BSC was utilised for performance measurement. The main reason for the high usage of the BSC first generation is that it is easy to implement and entails low cost of data collection, data

analysis and interpretation of the results. Nevertheless in recent years there has been an increasing tendency to focus on strategic alignment, so implementing the second and third generations of the BSC as strategic management tools has become more common. This shows that strategic alignment and implementing organisational strategies using the BSC has been taken into consideration by healthcare executives in recent years.

### Secondary findings

Apart from the main findings of this research, two secondary findings were attained, which are as follows:

(1) In 6 of the 29 reviewed articles (20%), the BSC was implemented by national-level healthcare organisations. This indicates that the BSC is a useful performance measurement tool even for national-level healthcare organisations.

(2) Up to 24 of the 29 reviewed articles (83%) included financial perspectives within their BSC in non-profit healthcare organisations. This shows that the financial perspective is a matter of concern even for the public health sector as the financial KPI appear in the form of cost reductions in non-profit sectors.

### Opportunities for future study

All 29 reviewed articles developed specific BSC for their own organisations. Although this tailored approach is desirable, the following areas were identified as opportunities for future research:

(1) To develop a generic BSC for the health sector to act as a template or building block. This would be useful as a first draft toward developing a customised BSC for every healthcare



organisation. A generic BSC would cater for all types of health-care organisations, including local hospitals, district hospitals and national healthcare organisations.

(2) To develop a generic approach for developing the BSC for the health sector. This approach can be used by directors of all healthcare organisations to design a customised BSC for their own organisation.

(3) To integrate the AHP method with the BSC in order to achieve a reliable and efficient performance measurement system for the health sector. The AHP method is useful for selecting the right KPI and ranking them precisely, especially in cases that require selection of the best KPI among numerous verified KPI.

### Competing interests

The authors declare that there are no competing interests.

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