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Science and Practice of Balanced Scorecard in a Hospital in Pakistan:
Feasibility, context, design and implementation

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A SPECIAL SMILE, A SPECIAL FACE, A SPECIAL SOMEONE I CAN'T REPLACE

Dedicated to my father late FURQAN AHMED RABBANI.....the first Ph.D in our family
ABSTRACT

Background: Millennium Goals emphasize good governance and health systems research. In Pakistan, hospitals provide the major bulk of both basic and advanced care. Challenges faced by the hospitals in Pakistan include: poor quality of care, weak management structures, inappropriate resource allocation and a lack of timely information system for decision making. Balanced Scorecard (BSC) is a strategic performance management tool that could offer an opportunity to improve performance measurement and management.

Main aim: To aim was to determine whether BSC application is feasible in the context of a low-income hospital setting, to identify organizational culture, as well as design the scorecard and describe the contextual barriers and strategic processes that hinder or facilitate its implementation.

Methods: The study setting for three sub-studies (II, III, IV) is a private university hospital in Karachi Pakistan. In Study I, a systematic review of electronic databases explored the experience of BSC in high-income countries (HICs), and its feasibility in the context of low-income countries (LICs). A cross-sectional cultural assessment survey in a clinical department with eight subspecialty units was conducted prior to designing the BSC (study II). Validated questionnaires were used. The first contained twenty items addressing perceptions of cultural typology (64 respondents). The second assessed staff views on quality improvement implementation (48 faculty members). Applying the modified Delphi technique, an expert panel of clinicians and hospital managers reduced a long list of indicators to a manageable size (Study III). Study IV was a multi-method case study of contextual implementation of BSC in four clinical units of this hospital. Pettigrew’s framework of strategic change was used to guide data collection and analysis.

Results: It was concluded that despite contextual challenges, BSC application can be undertaken in selected LICs. Committed leadership, conducive culture, quality information systems, viable strategic plans, and optimum resources are required (I). Organizational culture was assessed prior to designing and implementing the BSC. A mixed culture was observed (II). The mean cultural scores were group (participatory) = 17.5, developmental (open))=13.7, rational (efficiency driven)= 31.2 and hierarchical (bureaucratic) =37.2. The latter was the dominant cultural type. Group (participatory) and developmental (open) culture types had significant positive correlation with optimistic perceptions about leadership (r = 0.48 and 0.55 respectively, p<0.00). Using modified Delphi, an expert panel of clinicians and hospital managers selected 20 indicators for the four BSC quadrants with consensus (III). Indicators were rated on a scale of 1–9 using a predefined criteria and median scores assigned. Five interrelated themes were identified through data triangulation (IV). Making the culture more participatory, presenting clear direction integrating support for BSC in policies and resources emerged as desirable attributes in all four units. The two units that lagged behind were more involved in direct inpatient care with considerable clinical workload.
**Conclusion:** Feasibility of BSC in LICs is dependent on certain criteria being fulfilled. The study hospital which has predominant characteristics of a hierarchical culture needs to enhance participatory leadership approaches. The role of the multidisciplinary teams is important in selecting indicators for BSC with consensus. Existing hospital data in LICs can be used to choose indicators for the BSC despite issues with data quality. Leadership could consider role clarification for BSC with adequate rewards and recognition system. A starting point could be outpatient clinical services with gradual scorecard scalability. Findings have implications for hospital management in both HIC and LIC settings.

**KeyWords:** Balanced Scorecard, low-income countries, hospital, systematic review, organizational culture, leadership, modified Delphi, indicators, context, Pettigrew’s framework, case study, implementation, barriers, strategic processes.
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<tr>
<td>AHC</td>
<td>Academic Health Centres</td>
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<td>AKUH</td>
<td>Aga Khan University Hospital</td>
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<td>BHU</td>
<td>Basic Health Unit</td>
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<td>BSC</td>
<td>Balanced Scorecard</td>
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<td>CVF</td>
<td>Competing Values Framework</td>
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<td>EFQM</td>
<td>European Foundation for Quality Management</td>
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<td>GNI</td>
<td>Gross National Income</td>
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<td>GHIs</td>
<td>Global Health Initiatives</td>
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<td>HICs</td>
<td>High Income Countries</td>
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<td>HMIS</td>
<td>Health Management Information System</td>
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<td>IOM</td>
<td>Institute of Medicine</td>
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<td>ISO</td>
<td>International Organization for Standardization</td>
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<td>JCIA</td>
<td>Joint Commission International Accreditation</td>
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<td>IT</td>
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<td>KPIs</td>
<td>Key Performance Indicators</td>
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<td>LICs</td>
<td>Low- Income Countries</td>
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<td>LMICs</td>
<td>Low-and Middle Income Countries</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>MOPH</td>
<td>Ministry of Public Health</td>
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<td>NCQA</td>
<td>National Committee for Quality Assurance</td>
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<td>NHS</td>
<td>National Health Service</td>
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<td>NWFP</td>
<td>North Western Frontier Province</td>
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<td>PGF</td>
<td>Pettigrew’s Framework</td>
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<td>PHC</td>
<td>Primary Health Care</td>
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<td>PM</td>
<td>Performance Measurement</td>
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<td>Quality Improvement Implementation Survey</td>
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<td>QMS</td>
<td>Quality Management System</td>
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<td>TQM</td>
<td>Total Quality Management</td>
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1 INTRODUCTION

1.1 GLOBAL HEALTH AND HEALTH SYSTEMS

Global health is the health of populations in a global context and transcends the perspectives and concerns of individual nations (Brown et al., 2006). It is about worldwide improvement of health, reduction of disparities, and protection against global threats that disregard national borders (Macfarlane et al., 2008). According to World Health Organization (WHO), the present circumstances in health care make the moment unique for global health because health is being increasingly recognized as a key element of sustainable economic development and effective governance (WHO, 2001). Moreover several new initiatives are coming forth (Frenk, 2010) to strengthen national health systems as the core of the global health system and a fundamental strategy to achieve the health-related Millennium Development Goals (MDGs).

One response has been the emergence of the Global Health Initiatives (GHIs) with their selective focus on specific diseases, products or populations. However, in a vicious circle, weak health systems have constrained the delivery capacity of the GHIs while the selective approach of the GHIs has also, in some cases, had the unintentional effect of further eroding the capacity of health systems. This dilemma has prompted a heightened commitment from all stakeholders towards health systems strengthening (WHO, 2009 a)

‘The responses of many health systems so far have been generally considered inadequate and naïve...a system’s failure requires a system’s solution-not a temporary remedy’ (WHO, 2008a).

Health systems are defined as comprising all the organizations, institutions and resources that are devoted to producing health actions (WHO, 2000). Fundamentally, a working health system improves health. By clarifying and quantifying the goals of health systems and relating them to the essential functions, the WHO framework (Figure 1) proposes a way of examining how well a health system is doing, given the resources available to it. The Flagship report from the Alliance for Health Policy and Systems Research WHO, describes six clearly defined health system building blocks that together constitute a complete system (WHO 2009 b; WHO, 2009 c).

Service delivery: including effective, safe and quality personal and non-personal health interventions

Health Workforce: responsive, fair and efficient given available resources and insufficient numbers

Health Information: ensuring the production, analysis, dissemination of reliable information

Medical technologies: including medical products, vaccines and other technologies

Health Financing: raising adequate funds for health and avoiding financial catastrophe
Leadership and governance: ensuring strategic policy frameworks, effective oversight, coalition building, accountability, regulations, incentives and attention to system design

The multiple relationships and interactions among the blocks, how one affects and influences the other, converts these blocks into a system. These blocks contribute to a number of socially desirable goals as defined in the WHO framework; improving the health of the population they serve; responding to people's non-medical expectations; providing financial protection against the costs of ill health and improving efficiency.

Figure 1: The building blocks of the health systems: aims and attributes.
Source: (The World Health Organization 2009b)

There is increasing consensus that stronger health systems are key to achieving improved health outcomes (Travis et al., 2004). Building up and strengthening health systems are vital if more progress is to be made towards achieving the MDGs. Unless urgent investments are made in health systems, current rates of progress will not be sufficient to meet most of the goals (WHO, 2005). Governance, stewardship and knowledge management are strong suggested research areas with a potential to affect attainment of the targets for the MDGs (Becerra-Posada, 2004).

1.2 PERFORMANCE ASSESSMENT IN GLOBAL HEALTH SYSTEMS

Work to develop sensitive and easily measurable indicators for monitoring changes within each health system building block is ongoing. Such tools are necessary if systems are to become capable of achieving the effective and universal coverage at sufficient quality and safety necessary for improved health and health equity, responsiveness, risk protection and efficiency (WHO, 2009a). In a review of current state of performance measurement (PM) it was highlighted that in the United States (US), PM was first formally reported at the
Massachusetts General Hospital in 1915. Studies of PM show that Codman’s concepts emphasized notions such as maintaining patient records, monitoring performance and examining access to care and were considered new and novel (Loeb, 2004). Other articles tracing history of health care quality improvement note that in 1917, using some of Codman’s ideas, the Hospital Standardization program was established by the American College of Surgeons; focusing on creating “minimum standards of care” and a system of Accreditation for ‘external evaluation of health care’ (Luce et al., 1994; Schyve, 2000). Moreover the College attended to matters such as the qualifications for staff membership, the organization of medical staff, policies governing the work done in the hospital, the arrangements for audit, and the diagnostic and therapeutic facilities. In 1952 standards of performance were being raised by the creation of the Joint Commission of Accreditation of Hospitals developed by the merger of the American College of Physicians, the American Hospital Association and the Canadian Medical Association with the already existing American College of Surgeons (Luce et al., 1994; McWhinney, 1972; Scrivens, 1995).

The considerable interest in measuring the performance of health systems worldwide is illustrated by the recent European Ministerial Conference on Health Systems, which culminated in the Tallinn Charter entitled Health systems for health and wealth (WHO, 2008a). An emphasis on health systems performance assessment was noted in this conference. Others have also pointed out the need for a basic set of indicators of health system functions and of scientifically sound, practical and user-friendly tools (Boerma et al., 2009). In the United States of America, for example, 37 indicators were selected to assess performance in the domains of long, healthy and productive lives, quality, access, efficiency and equity (Schoen et al., 2006). The indicators were benchmarked against best performers, typically those achieved by the top 10% of countries, states, health plans, hospitals and other providers. In England, considerable investments are being made in assessing performance of the National Health Service (NHS) through monitoring a large set of indicators with targets (Lakhani et al., 2005). In Canada, the emphasis is on developing a monitoring system for primary health care performance that focuses on population-based data sources (Esmail and Walker, 2008). The Netherlands publishes a bi-annual Dutch health care performance report, focusing on quality, access and costs using more than 100 indicators (Westert and Verkleij, 2006).

Indonesia conducted a comprehensive within-country assessment using WHO's health systems performance assessment framework, as part of its Healthy Indonesia 2010 policy (National Institute of Health Research and Development, 2005). In South Africa, the Health Systems Trust has now published three editions of its district health barometer, which monitors about 20 indicators (Barron et al., 2007). In addition to comparisons across districts, metropolitan areas and parts of the country considered to be severely disadvantaged were included. In Afghanistan, the rapid expansion of health services was monitored using a balanced scorecard that focused on service delivery through a comprehensive facility survey (Hansen et al., 2008). In Mexico, a report card for all states was used to assess the effects of
the health system reforms during 2001-2006, including a summary measure based on 11 indicators derived from a variety of clinical- and population-based data sources (Gakidou et al., 2006).

1.3 ROLE OF HOSPITALS IN HEALTH SYSTEMS

As discussed in the World Health Report 2000, the organization, configuration and delivery of services impact on the performance of the overall health system (WHO, 2000). This report introduced the concept of stewardship stating that ‘governments should ensure that their country’s health care system provides optimal health services for its population’. It is recommended that to achieve this, emphasis should be put on development of systems monitoring and regulating the performance of health care providers, especially hospital performance (WHO, 2002).

In this perspective hospitals deserve special attention

*Hospitals are an important part of any health system: they provide complex curative care that depending on their capacity, acts as a first referral, secondary or last referral level curative care facility.....they are centres for transfer of knowledge and skills; they constitute an essential source of information and power, play a direct role in training health care workers, provide necessary data to national health planners; and they generally spend the major part of national health resources--* (WHO, 1994; Disease Control Priorities Project, 2007).

Despite this emphasis there is paucity of good evidence regarding the wider role of hospitals in health systems (English et al., 2006). In LICs the hospital sector often consumes approximately half of health care budgets (Nolan et al., 2001; McKee and Healy, 2002). There are approximately 8,500 big and small public and private hospitals in the Eastern Mediterranean region of WHO. Of these just over 50% are in the public sector. Almost two thirds of these hospitals are in the three countries –Egypt, Pakistan and Iran (Siddiqi et al., 2008). Small hospitals (district level) sit at the apex of the pyramid of primary care in many low-income country health systems (English et al.2008). These and large urban teaching hospitals are primary referral sites in LICs. In addition teaching hospitals play a major part in establishing case management practices within a country (Nolan et al., 2001).

Implementation of a functional and well managed Primary Health Care (PHC) system leads to the alteration in quantity and quality of diseases presenting to the hospitals in HICs (Siddiqi et al., 2001). On the other hand if PHC is poorly functioning then the role of hospitals becomes all the more important. In LICs patients mostly choose to bypass the PHC due to poor quality services and proceed directly to the hospitals (English et al., 2006). PHC activities have not brought about expected improvements in health status, especially of rural population groups in LICs. Major reasons include, poor governance, dissatisfaction with quality of care offered, non-availability of physicians, and patients being too ill to be taken to the PHC facility (Walley et al., 2008; Siddiqi et al.,2001). PHC utilization ranges from less than 10 visits per 10 persons per year in rural Egypt to 1.4 visits per person per year in rural Tanzania (Siddiqi
et al., 2001). Under these circumstances the bulk of the disease burden is shifted to the hospitals in LICs. Improving hospital performance can thus maximize health benefits and improve health systems (English et al., 2008).

1.4 QUALITY OF SERVICES DELIVERED BY THE HOSPITALS

In HICs, clinical outcomes for specific conditions including the risk of death is correlated with quality of hospital care (Meehan et al., 1995). There is little information available about quality of hospital care in LICs or its relation to morbidity and mortality outcomes. It is known that many children die at home after being treated in inpatients or outpatients (Islam et al., 1996). Reports of poorly organized triage and emergency care and mortality associated with non-standardized management has been reported from studies in LICs (Ahmed et al., 1999).

Given the budgetary consumption, the relatively poor quality and efficiency of services provided by hospitals in LICs limit their effectiveness and produce a low return for this investment (Nolan et al., 2001; Brugha and Zwi 1998). Some of the challenges resulting in compromised quality of care include hierarchically organized systems, shortage of professional staff and beds, irregular delivery of drugs and supplies, non functioning laboratories and equipment (Disease Control Priorities Project, 2007). This is not surprising. Hierarchical hospital systems should be viewed in the light of larger macro environment of these countries. It has been reported elsewhere that hospital hierarchies frequently overlap with wider political and administrative bureaucracies (English et al., 2006). Moreover sources estimate that in LICs the total number of hospital beds is only 1.3 per 1000 population and average number of doctors 0.5 per 1000 population. In Sub-Saharan Africa the ratio of doctors to population is a dismal 0.09 doctors per 1000 population (Siddiqi et al., 2001; World Bank 2002). These estimates are considerably lower than the average for beds and doctors of 7.2 per 1,000 and 2.9 per 1,000 respectively in HICs (World Bank, 2002). Lack of flexibility in reallocating roles between groups of health workers, absence of staff performance reviews and poor managerial coordination compound these problems (Disease Control Priorities Project, 2007).

Thus there are several priority areas for improving hospital services. Facilities need to be well organized and managed. Staff (doctors, nurses, others) need to be specifically trained in guidelines for standard treatment so that inordinate delays in assessment and treatment of patients are avoided. Supplies of basic drugs need to be consistent.

1.5 HOSPITAL PERFORMANCE MEASUREMENT (PM) AND MANAGEMENT

Measurement is central to the concept of hospital quality improvement; it provides a means to define what hospitals actually do and to compare that with the original targets in order to identify opportunities for improvement. The principal methods of measuring hospital performance are regulatory inspection, public satisfaction surveys, third-party assessment and statistical indicators (Shaw, 2003). The effectiveness of measurement strategies depends on
many variables including their purpose, the national culture, how they are applied and how the results are used.

Relevant principles based on international experience (Sitzia, 1999) of performance measurement in hospitals suggest that (i) performance failures are more often a result of failures in systems and processes rather than of individual competence or knowledge (ii) performance assessment requires reliable methods of measurement against validated standards (iii) the reliability of indicators is determined primarily by the accuracy, completeness and timeliness of patient- based data collected at institutional level (iv) valid comparisons of performance between institutions demand rigorous standardization of assessment criteria and methods, especially if they are to be used between countries.

Performance management has been clearly driven by the continuing emphasis on accountability, effectiveness and efficiency (Radnor and Lovell, 2003a). There are growing demands to ensure transparency, control and reduce variations in clinical practice (Groene et al., 2008). Without maintaining a standard level of care, the reputation of the hospital can be in jeopardy (Hibbard et al., 2005). Gauging performance can allow hospital governing boards to recognize areas of improvement (Griffith et al., 2002). Dashboard metrics and report cards have emerged as viable options for evaluation of healthcare programmes and managerial practices (Corrigan and Nielsen, 1993; Woodward et al., 2004). To develop such dashboards, performance indicators need to be selected with consensus. Delphi and Nominal group techniques have emerged in the last two decades to identify and prioritize performance indicators (Scott and Black, 1991). Such indicators need to be translated into generalizable, standardized, interpretable and useable information for clinicians or health service managers in the form of performance management tools (Willis et al., 2008). Methodologies for self-assessment of organizational performance have therefore been developed. Several performance management tools for hospitals have been created to assist in this process (Ruiz and Simon, 2004).

1.6 HOSPITAL PM TOOLS AND THE BALANCED SCORECARD

A stepwise methodology needs to be developed for health care organizations searching for quality improvement, organizational excellence and patient safety (Ruiz and Simon, 2004). In this regard it is suggested that voluntary certification and accreditation represent, at present, a necessary recognition by service payers of the safety and suitability of health care organizations as providers. On the other hand, self-assessment against a PM tool may be seen as a higher development stage, which is able to drive the organization beyond the scheme of external evaluation and to establish a method for managing the collected knowledge gathered from the self-assessment exercise.

To provide the highest quality patient care and to follow through with performance improvement initiatives, hospitals and other healthcare organizations have begun to apply business-based quality methodologies. Going into the details and application of each of these
tools is beyond the scope and mandate of this thesis. In this section, I have attempted to summarize the initiatives which are more relevant to my work.

*Total Quality Management* (TQM) has had a significant impact on the approach to management in Western economies since its promotion as a concept in US in the 1980s (Andersen et al., 2004). Between 1989 and 2000, numerous articles promoted the benefits of implementing TQM and associated quality management tools as a means to enhance growth, profitability, and customer satisfaction. In 1993, an international survey found TQM to be the third most commonly used tool (Rigby, 2001). By 2002, however TQM had dropped to 18th place in the same rankings (Rigby, 2003). Besides TQM, some of the other management tools (commonly associated with TQM) have been widely accepted. It is to be noted that *Benchmarking* ranked second in 2003 and the number of *ISO 9000* (International Organization for Standardization) certificates increased by 25 per cent from 2000 to 2001 and the number of *ISO 14000* certifications increased by more than 60 per cent in the same period (ISO, 2002). In 2001, more than 800,000 copies of the *Malcolm Baldrige* National Quality Award criteria were distributed in the USA and the British Quality Foundation estimates that more than 20,000 organizations across Europe are using the *European Foundation for Quality Management* (EFQM) model and that the number is rising (Andersen et al., 2004).

Getting a quality certificate, or winning an award risks quality initiatives being implemented in isolation rather than in close combination with an external focus on customer and other stakeholders (Harari, 1993). Evidence suggests that successful application of quality management tools: *Six Sigma*, Malcolm Baldrige, *EFQM* excellence model, and *ISO standards* can be significantly strengthened through strategic control (Muralidharan, 1997). An integration of these concepts when combined with a modern performance management tool such as the Balanced Scorecard (BSC) has the potential to strengthen strategic control and lead to successful quality management (Andersen et al., 2004).

BSC is a multidimensional framework (Figure 2) developed by Kaplan and Norton in 1992 (Kaplan and Norton, 1996a) for describing, implementing and managing strategy at all levels of an enterprise. It builds on the critical success factor (CSF) concept of a limited set of performance measures and reports indicators in four different perspectives with an equal weightage: (i) labeled learning and growth, (ii) internal processes, (iii) customer satisfaction, and (iv) financial performance. These indicators can be developed from the currently existing data systems and presented as one integrated report for decision-making (Castaneda-Mendez et al., 1998). Metrics are usually measured on a monthly or quarterly frequency to evaluate intervention effectiveness, quality improvement, motivate change and move towards organizational excellence (Kaplan and Norton, 2000).
BSC instills understanding of and engagement in continuous quality improvement (Weir et al., 2009). Total Quality Management (TQM) focuses on only quick fixes and does not include quality measures (Schwartz, 2005). BSC involves all tiers of the organization whereas using a Quality Management System may result in less emphasis at higher organizational levels (Ovretveit and Al Serouri, 2006). Traditional benchmarking techniques in healthcare also have a limited scope because of their relatively narrow focus on financial and clinical indicators only.

BSC application was initially limited to the private business sector in HICs but has since moved stealthily into industries from manufacturing, technology (computing, electronics, information) engineering, fast food (Wendy’s), banking, hospitality, construction, automotive, telecommunications to healthcare. BSC is currently being used by many Fortune 500 and Fortune 1000 companies. In the industrial setting, BSC application resulted in improved business targets although several implementation challenges (e.g. costs and standardization of indicators across various settings) were identified (Ahn, 2001; Davis and Albright, 2004; Denton and White, 2000; Gumbus, 2005; Gumbus and Lyons, 2002; Kagioglou et al., 2001, Plant et al., 2003; Ross, 2003; Shaw, 1995; Zelman et al., 2003).

Despite the specific need to implement BSC in a context sensitive manner, with minimum, yet appropriate resource usage and full organizational support, BSC still seems to have relative advantages over other PM tools. In summary, the potential incentives for adopting the BSC include its ability to meet the new post industrial age/information age challenges, the fact that
it overcomes the perceived deficiencies of existing performance management systems and complies with the wishes of important stakeholder interests (e.g., the Government for public sector organizations), the quest to match other organizations who are using the BSC and to obtain the positive benefits contained within the BSC system (Radnor and Lovell, 2003a).

1.7 BALANCED SCORECARD IN HEALTH CARE

The health domain has entered the crucial phase of an important paradigm shift. The word 'customer' has started replacing the word 'patient'. Hospitals are also being regarded as 'industries' which are charged with the task of producing more and better goods (health care) within available budgets (Schaefers et al., 2007). This requires putting into place the same PM concepts which are being used in industries into health care.

Innovative management methods and regular collection and use of information (linking clinical, financial, and volume data by product line) are therefore being advocated in health care settings also (Travis et al., 2004). As a result of emphasis on performance management in the 1990s, dashboard metrics and report cards emerged as viable options for evaluation of health care programmes and managerial practices (Corrigan and Nielsen, 1993; Woodward et al., 2004). Later these concepts of 'balanced performance' (Kaplan and Norton, 1993) evolved into the Balanced Scorecard (BSC) which became an increasingly popular means of reporting health system performance (Woodward et al., 2004). The first refereed article on BSC in healthcare appeared in 1994 (Inamdar et al., 2002, Zelman et al., 2003) and discussed the strong need for 'continuous quality improvements' in the health care setting (Griffith, 1994).

BSC emerged as a model designed to fit the demands of any organization and as such healthcare organizations became businesses that required performance evaluation.

“They look to new business tools and best practices to help them take a more strategic approach that will differentiate services and attract more business while complementing their current focus on operational improvements,” (Inamdar et al., 2002).

About a decade after Kaplan and Norton developed the BSC, a number of healthcare organizations in various healthcare settings throughout North America and other HICs started to adapt and implement the BSC framework for their organizations. Use of BSC in HIC health settings has been detailed in study I, and also described in the results and discussion section of this thesis.

Examples of BSC use from LICs are scarce. PM strategies similar to BSC have been however applied (study I). Recently in the Ethiopian Hospital Management Initiative, needs assessment and baseline evaluations were carried out using specific indicators (Hartwig et al., 2008). Similarly in a rural Yemeni hospital, the Ministry decided to implement the Quality Management System (QMS), a method to improve service quality. An increase in compliance and modest improvements in patient satisfaction and utilization were the by-products of implementation (Øvretveit and Al Serouri, 2006). BSC was used to assess the performance of
a tertiary-care public hospital in Sri Lanka with a focus towards improving quality of care (Ministry of Health Sri Lanka and Japan International Cooperation Agency, 2003). Based on noticed variations after BSC implementation, the principles of Total Quality Management (TQM) were used in the Sri Lankan setting for long and short term strategy development. As mentioned above, recently BSC was applied at a national (macro) level to demonstrate how provinces and the country are doing in delivering the basic package of health services in Afghanistan (Peters et al., 2007).

It can therefore be seen that healthcare systems are looking for empirical evidence to demonstrate excellence in performance (Axelsson, 2000) and with these recent examples of the use of PM systems in LICs there is increasing scope of applying BSC in the LIC context.

### 1.8 SOME PITFALLS OF BSC

The balanced scorecard has quickly become a leading management tool. But performance measurement is difficult, so any system, including the balanced scorecard, is likely to have unanticipated and often dysfunctional consequences (Norreklit et al., 2008; Hepworth, 1998). By recognizing the barriers to implementation, motivation to overcome these challenges may also arise (Martinsons et al., 1999). In a study on BSC applicability for Academic Health Centres (AHCs) the authors concluded that the unique characteristics of AHCs mitigate the full benefit of the BSC approach and key modifications must be made to account for these unique characteristics (Zelman et al., 1999). In UK, a series of focus groups from all the key organizations within the Bradford Health Action Zone concluded that if certain key criteria are met, successful BSC implementation may then proceed otherwise ‘blind’ BSC implementation may result in potential failure (Radnor and Lovell, 2003b). Some other challenges in the implementation are; translating the strategy and performance measures into easily understandable language, communicating the importance of BSC to employees using the best communication medium and commitment from all levels of organization (Inamdar et al., 2002).

Table 1 describes some of the pitfalls associated with the BSC. The discussion section of this thesis refers to several of these challenges later in the text.
Table 1: Some Pitfalls of BSC

<table>
<thead>
<tr>
<th>Pitfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition of relevant data/indicators (Zelman et al., 2003a)</td>
</tr>
<tr>
<td>Translating into easily understandable language (Inamdar et al., 2002)</td>
</tr>
<tr>
<td>Needs budgetary resources (Mooraj et al., 1999)</td>
</tr>
<tr>
<td>Communication hurdles (Inamdar et al., 2002)</td>
</tr>
<tr>
<td>Organizational commitment (Inamdar et al., 2002)</td>
</tr>
<tr>
<td>Disrupted by upper management changes (Lorden et al., 2008)</td>
</tr>
<tr>
<td>Does not work if introduced as an independent additional initiative</td>
</tr>
<tr>
<td>Lack of effective communication strategy is a barrier to implementation</td>
</tr>
<tr>
<td>Success dependent on organizational culture, strategic orientation</td>
</tr>
<tr>
<td>At best case studies can outline its advantages and disadvantages</td>
</tr>
<tr>
<td>Obtaining consensus about relevant strategic information at all</td>
</tr>
<tr>
<td>organizational levels</td>
</tr>
<tr>
<td>Its complexity may result in only partial implementation (Dinesh and</td>
</tr>
<tr>
<td>Palmer, 1998)</td>
</tr>
</tbody>
</table>

1.9 BSC, STRATEGIC CHANGE AND USE OF THE PETTIGREW AND WHIPP’S FRAMEWORK

BSC provides a basis for executing good strategy well and managing change successfully (Rohm, 2002). Building a Balanced Scorecard performance system causes people to think differently (more strategic) about their organization and their work. It also brings change in the way things are done, as new policies and procedures are developed and implemented.

Members of Nova Scotia Power, Inc., a Canadian electric utility company, established that the BSC creates organizational change in leadership and staff management (Niven, 2006). Introducing the BSC in the health care setting in Canada, placed more accountability on Ontario Acute care hospitals and improved the quality of data collection within hospital staff (Zelman et al., 2003). In a financial institution in the Netherlands, the BSC was implemented to change organizational control and as a result a mechanism was developed for complete organizational restructuring and development. During an organizational merger the BSC was used as “the central organizing framework and communication mechanism to help guide the ongoing organizational change processes” (Braam and Nijssen, 2004).

The standards of the organization before the amendments occur (context) and the methods in which new changes are incorporated into the organization (process evaluation) are also important considerations while understanding organizational change (Pettigrew, 1988; Schneider et al., 1996; Serafeimidis and Smithson, 1996).
Sustainable change is based upon two variables: climate which refers to the experiences of the members of the organization and culture denoting the beliefs, and values of the organization (Burke and Litwin, 1992; Schneider et al., 1996). Pettigrew and Whipp’s Content, Context and Process framework (PGF) of strategic change has gained popularity in understanding the process of change. It has been widely used in analyzing and learning from change programmes in organizations. Overall, the framework focuses researchers and managers on the Why of strategic change with relevance to context; the What of strategic change in terms of its content; and the How of strategic change processes (Pettigrew and Whipp, 1993).

Pettigrew and Whipp emphasize the continuous interplay between these change dimensions (Figure 3). The implementation of change is an iterative, cumulative and re-formulation-in-use process. Successful change is a result of the interaction between the content or what of change (objectives, purpose and goals); the process or how of change (implementation); and the organizational context or the why of change (external and internal environment).

PGF has been used in a multitude of studies in areas from education to information systems to healthcare (Fulop et al., 2000; Jayasuriya, 1999; Vas and Lejeune, 2004). It led health care in the Philippines to discover the reasons for failure of information systems including: organizational culture, leadership, human resource issues, feasibility and recognized important aspects of focus such as organizational structure and human resource development (Jayasuriya, 1999). Using the framework District Health Authorities in UK started to better understand the reason for change in specific districts and improve future processes (Pettigrew et al., 1992).

Similarly PGF was used in Canada in a pilot study to indicate that despite a supportive organizational culture and transformational leadership, best practice guidelines were variable and concluded that other contextual factors should be examined (Marchionni and Ritchie, 2008). In US, using PGF, a study provided information regarding contextual elements and related strategic processes key to successful implementation and sustainability of Evidence Based Practice (EBP) in an acute care hospital setting (Stetler et al., 2007).

Therefore in line with work done earlier, I also used the lens of PGF in study IV to understand the how, what and why of BSC implementation in the study setting.
Figure 3: A model of strategic change and competitive success.

2 PAKISTAN COUNTRY PROFILE

The Islamic Republic of Pakistan is a country of 852,382 square kilometres. Located in Southern Asia, it shares borders with India, China, Iran, Afghanistan and the Arabian Sea. Pakistan is the result of a division in the British Indian Empire in August 1947 and received independence on August 14. It comprises of four provinces: Punjab, Sindh, North Western Frontier province (NWFP) and Baluchistan and four federal territories (Ghaffar et al., 2000).

Figure 4: Detailed map of Pakistan and surrounding countries.

![Map of Pakistan](http://www.pakemb.de/)(Pakistan, 2007).

Study site Karachi has been circled

Pakistan is the seventh most populous country in the world, with a population of 135 million people. It is a nation that has made economic progress but it is struggling to achieve sustainable development, political integrity and liberation from terrorism. The health and population characteristics in Pakistan are high fertility, low life expectancy, a young age structure and a high maternal and child mortality (Table 2A). The country is undergoing a demographic transition, which is characterized by a change from high mortality and high fertility to lower mortality but with a relatively high fertility (Ghaffar et al., 2000). According to a study on the burden of disease in Pakistan diarrhea, lower respiratory infections, ischemic heart disease, septicemia, and injuries are among the top 15 causes of premature deaths.
Data from Karachi, the biggest city of Pakistan with a population of approximately 13 million (United Nations, 2007) shows that the main causes of death in adults included circulatory disorders, injuries (road traffic crashes, burns) and complications of pregnancy (Marsh et al., 2000).

Table 2A: Pakistan’s Health Outcome Indicators

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Outcomes</td>
<td></td>
</tr>
<tr>
<td>Life expectancy</td>
<td>59.1</td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>96</td>
</tr>
<tr>
<td>Under 5 mortality rate</td>
<td>138</td>
</tr>
<tr>
<td>Maternal mortality ratio</td>
<td>550</td>
</tr>
<tr>
<td>Population growth rate</td>
<td>2.7</td>
</tr>
<tr>
<td>Children with low weight for age</td>
<td>40.1</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>25</td>
</tr>
<tr>
<td>EPI coverage (Children 12-23 months, fully immunized – based on recall and record)</td>
<td>45</td>
</tr>
<tr>
<td>Pregnant women attended by trained person</td>
<td>27</td>
</tr>
<tr>
<td>Postnatal care</td>
<td>11</td>
</tr>
<tr>
<td>Contraceptive prevalence</td>
<td>12</td>
</tr>
</tbody>
</table>


Table 2B: Regional comparison of Pakistan’s Health Outcome Indicators

<table>
<thead>
<tr>
<th>Countries</th>
<th>Life Expectancy at Birth</th>
<th>Infant Mortality Rate (per 1000 live births)</th>
<th>Maternal Mortality Rate (per 100,000 live births)</th>
<th>Child Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>62 years</td>
<td>54</td>
<td>570</td>
<td>73</td>
</tr>
<tr>
<td>Pakistan</td>
<td>64 years</td>
<td>79</td>
<td>320</td>
<td>99</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>71 years</td>
<td>12</td>
<td>58</td>
<td>14</td>
</tr>
<tr>
<td>India</td>
<td>63 years</td>
<td>56</td>
<td>450</td>
<td>74</td>
</tr>
</tbody>
</table>

Source: Human Development Report, Delhi, Oxford University Press, 2008
Comparing Pakistan with its neighboring South Asian counties (Table 2B) it can be seen that Pakistan’s infant mortality and child mortality are dismally high. This can be explained by the poor quality of health service delivery in the LICs as explained above. A description of Pakistan’s health systems will further assist in understanding some of the circumstances surrounding this poor performance in health indicators.

2.1 HEALTH SYSTEMS CONFIGURATION IN PAKISTAN

Health care provision in Pakistan comprises both public and private services. The private sector serves more than 70 percent of the population, and is primarily a fee-for-service system (National Institute of Population Studies, 2006). Pakistan’s service delivery infrastructure at a primary health care level consists of dispensaries and Basic Health Units (BHUs) which provide outpatient services. Each BHU covers around 10,000 population. Maternal Child Health Centres (MCHCs) provide basic maternal and child care, including ante-natal care, nutrition, normal delivery and immunization. Rural Health Centres (RHCs) provide more extensive outpatient services and some inpatient services, and each RHC covers around 30,000–45,000 population. The Tehsil (sub-district) headquarters hospital covers 100,000–300,000 population at sub district level with 40 to 50 beds; while the district headquarters hospital serves a geographical district of about one to two million people with 80–100 beds (Razzak et al., 2008). However, despite this large infrastructure, these facilities remain under-utilized and are practically non-functional. A study also reported that less than half of the households who experienced serious childhood illnesses were taken to a nearest first-level care hospital mainly because of dissatisfaction (non-availability of doctor, medicines etc) with PHC facilities (Siddiqi et al., 2001).

Table 2C: Pakistan Health System Indicators

<table>
<thead>
<tr>
<th>Health System Performance</th>
<th>1997</th>
<th>2000</th>
<th>2001</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>National health policy documents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total health expenditure as percent of GDP</td>
<td>2.5</td>
<td>2.8</td>
<td>2.6</td>
<td>2.4</td>
</tr>
<tr>
<td>Total health expenditure per capita (average exchange rate)</td>
<td>16</td>
<td>14</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Private expenditure on health as % of total expenditure on health</td>
<td>67.4</td>
<td>67</td>
<td>65.3</td>
<td>72.3</td>
</tr>
<tr>
<td>Physicians per 10,000 population</td>
<td>5.7</td>
<td>6.7</td>
<td>6.9</td>
<td>8</td>
</tr>
<tr>
<td>Nurses and midwives per 10,000 population</td>
<td>3.4</td>
<td>4.2</td>
<td>4.6</td>
<td>3</td>
</tr>
<tr>
<td>Hospital beds per 10,000 population</td>
<td>5.4</td>
<td>6.7</td>
<td>6.9</td>
<td>6.9</td>
</tr>
</tbody>
</table>

In recent years, many alternative service delivery and financing models have been introduced at various levels, with varying levels of success, and several new health initiatives have also been launched. These include the legislation to make hospitals autonomous, the recent introduction of a national strategy to overhaul the primary health care system, pilot schemes to contract out basic health services in Punjab (the biggest province of Pakistan) and the National Commission for Career Structures of Health Care Providers to mention a few (Nishtar, 2006a). Such programmes aimed at promoting health have however been viewed as a developmental need and have, therefore, drawn policy and financial support from national plans for development (Government of Pakistan, 2003, Government of Pakistan, 2005). Gaps in the implementation of policies and lack of an inter-sectoral approach to health have prevented these plans from fully translating into desired outcomes. Although spending has been increased recently, issues of fund utilization still prevail and alternate mechanisms of financing health—some of which have the potential to make financing patterns more equitable and efficient—have not been mainstreamed into the delivery of care. Furthermore, disparities in spending patterns have been noted with regard to preventive versus curative allocations (Nishtar, 2006b). Consecutive 5-year plans show that clinical and hospital services have consistently consumed more than 45% of the total health budget (Planning Commission of Pakistan, 2006; Abrejo et al., 2008).

Due to governance issues, public health interventions suffer from implementation failures. Over the years, overlapping services have created ambiguities between federal and provincial roles and administrative authority. These problems are further exacerbated by poor regulation of the private sector (Nishtar, 2006a). In terms of human resources, concerns related to staff training and skills pose serious challenges (Rowe et al., 2005). 70% of population in Pakistan lives in rural areas (National Institute of Population Studies, 2006). The concentration of doctors and paramedical staff in large urban conglomerations leads to inequitable deployment of human resources (Table 2 C). Due to these issues in governance, quality of care, human resource allocations and health care financing, Pakistan continues to have gloomy health indicators.
3 RATIONALE

In most High Income Countries (HICs) there is a continued focus that exists towards improved quality in healthcare. Unsatisfactory quality of health services (particularly hospitals) continues to be reported from LICs including lack of resources such as beds, drugs and staff (Jönsson et al., 2007; Ovretveit and Al Serouri, 2006). Healthcare workers are limited in number for the vast population and there is an imbalance in the skill levels of these workers (Øvretveit and Al Serouri, 2006). Although some countries have defined detailed norms and standards of hospital care as part of long term health sector strategies, many countries lack any specific hospital strategy (WHO, 1994). Even where a well articulated strategy exists, decades of different political, social, economic and historical influences on health systems development have resulted in great variability in the quality of care delivered within and between LICs (English et al., 2006).

With regard to LICs, the challenges and major gaps in delivering quality health care within constrained health systems (as in Pakistan) have already been highlighted in section 1.4 and 2.1. Studies have reported that quality assessment tools in Pakistani hospitals are lacking and services are poor with bureaucratic infrastructures, lack of functional clarity between capital and recurrent budgets and between planning and implementation (Abdullah and Shaw, 2007; Green and Collins, 2003; Ministry of Health, 2009). Moreover same studies report that there is absence of regulatory frameworks between the federation and the provinces resulting in misappropriation of resources and poor governance. Therefore performance measures are needed to measure the quality of services and allocation of resources provided (Ghaffar et al., 2000).

However to successfully implement a performance management system, there is a need to understand the underlying frameworks and parameters. Although there is no one best intervention or strategy for achieving performance improvement (Marquez, 2001), there is growing emphasis that the implementation of the BSC which facilitates wise use of limited resources for quality improvement could be considered an option. There are however several challenges in understanding the feasibility and context, designing and implementing BSC in LICs.

First, it is difficult to find analytical studies on performance management tools such as the BSC in healthcare management research. Moreover, the kind of knowledge required to learn from experiences across countries is also limited (Miguel, 2006). There is therefore a need to systematically assess existing experiences of BSC implementation in HICs, review lessons learnt and determine feasibility in low-income countries by translating positive experiences across borders.

Second, BSC is a quality improvement initiative. Successful implementation of quality care initiatives requires a significant commitment to a culture emphasizing empowerment, autonomy and risk taking (Shortell et al., 1995). Therefore organizational culture assessment
has been recommended as a key prerequisite for improving quality of care and organizational effectiveness (Forsythe, 2005). Key factors that relate to culture with regard to quality implementation include supportive leadership, employee empowerment and satisfaction, appropriate information and analysis system, patient outcomes and sub-cultural diversity (Scott et al., 2003; Wakefield et al., 2001). All these factors are directly responsible in determining BSC application. However there are no published studies to date on institutional cultural assessment in Pakistan and the region.

Third, hospital management teams receive voluminous information from a wide variety of sources. Despite the widespread use of performance indicators, there is little research evidence on how to select the essential data to make evidence-informed decision making (Ovretveit and Al Serouri, 2006). There is too much evidence to sift through and the quantity of evidence does not equal quality of evidence (Holm, 2000). Such faulty information systems result in a clear lack of knowledge regarding where to focus priorities, where improvement is needed and whether ongoing initiatives were having a positive impact (Målqvist et al., 2008; Murray, 2007). The worldwide health community therefore needs to focus on improving measurement of a focused set of priority areas (Murray, 2007). BSC helps to focus on such priority areas. However there is a need to use formal consensus methods to synthesize expert or stake holder opinion to guide and prioritize group decisions in situations where information is lacking, contradictory or where there is an overload of information (Campbell et al., 2002).

Fourth, acknowledgement of the need to incorporate the contextual setting is a new emphasis in Balanced Scorecard literature (Kaplan and Norton, 2000). There are however hardly any published studies describing the motivational factors, required competencies, strategic processes and contextual barriers involved in BSC implementation in low income hospital settings.
4 OBJECTIVES

4.1 GENERAL AIM
The aim was to determine whether Balanced Scorecard (BSC) application is feasible in the context of a low income health care setting, identify organizational culture, design the scorecard and describe the contextual barriers and strategic processes that hinder or facilitate its implementation in the study hospital.

4.2 SPECIFIC OBJECTIVES

- To review the existing experiences of BSC implementation in High Income Countries and to assess the feasibility of its application in low income health care settings (I)
- To understand existing organizational culture in a low income hospital setting (II)
- To design a BSC for the study hospital and reach consensus about the selection and prioritization of indicators (III)
- To better understand the strategic processes and contextual barriers involved in BSC implementation in the study hospital setting (IV).
5 METHODS

This thesis is based on four studies with each one exploring an aspect of BSC application in a low income hospital setting. Feasibility is the focus of study I. It reviews the existing experiences of BSC implementation in HICs and assesses feasibility of its application in low income health care settings. Cultural context (prior to BSC application) is assessed in study II while study III uses a modified Delphi technique to design a BSC. Strategic processes and contextual barriers involved in BSC implementation in the study hospital are discussed in study IV.

5.1 STUDY SITE: LOCATION AND RATIONALE FOR SELECTION

All studies were conducted at the Aga Khan University Hospital in Karachi Pakistan (AKUH-K). Aga Khan University Hospital (AKUH) is located in the heart of mega city Karachi. It started operations in 1985, as an integrated, health care delivery component of Aga Khan University (AKU). It is a philanthropic, not-for-profit, private teaching institution. The hospital offers care to outpatients and inpatients of all socio-economic classes (Rafique et al., 2006). It has 542 beds in operation and offers a broad range of secondary and tertiary services to over 38,000 hospitalized patients and about 500,000 outpatients annually. Its inpatients have an average length of stay of 3.9 days. There are currently 400 trainees (interns, residents, fellows) affiliated with the hospital. The hospital is ISO certified and has a JCI (Joint Commission International) accreditation (Aga Khan University, 2009).

Table 3: Clinical Departments at the Aga Khan University Hospital Karachi

<table>
<thead>
<tr>
<th>Departments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Emergency Medicine</td>
</tr>
<tr>
<td>• Family Medicine</td>
</tr>
<tr>
<td>• Medicine – sections: Cardiology, Diabetes,</td>
</tr>
<tr>
<td>Endocrinology and Metabolism, Gastroenterology,</td>
</tr>
<tr>
<td>Haematology/ Oncology, Internal Medicine,</td>
</tr>
<tr>
<td>Nephrology, Neurology, Pulmonary and Critical</td>
</tr>
<tr>
<td>Care</td>
</tr>
<tr>
<td>• Obstetrics and Gynaecology</td>
</tr>
<tr>
<td>• Paediatrics and Child Health</td>
</tr>
<tr>
<td>• Pathology and Microbiology</td>
</tr>
<tr>
<td>• Psychiatry</td>
</tr>
<tr>
<td>• Radiology – section: Radiation oncology</td>
</tr>
<tr>
<td>• Surgery – section: Cardiothoracic, Dental-oral,</td>
</tr>
<tr>
<td>Maxillo-facial surgery, General surgery,</td>
</tr>
<tr>
<td>Neurosurgery, Opthalmology, Orthopedic,</td>
</tr>
<tr>
<td>Otolaryngology, Head &amp; Neck Surgery, Paediat</td>
</tr>
<tr>
<td>ric Surgery, Plastic Surgery, Urology, Vascular</td>
</tr>
<tr>
<td>Surgery Section</td>
</tr>
</tbody>
</table>

Source: (Aga Khan University, 2009)
http://www.aku.edu/AKUH/MedicalProfessional/listdept.shtml 2009

In 2004 as part of a larger self assessment and planning exercise by the Health Sciences Committee (Aga Khan University, 2005), it was identified that there is a need for integrated decision making by academicians and administration and developing a road map together to meet the hospital’s strategic priorities. I was a member of this committee and it made me
realize that the BSC approach could provide the desired framework where priority indicators could be integrated based on the hospital’s strategic plan with a potential to foster a culture of collegiality between clinicians and managers. Moreover it was also recognized that following the ISO certification and JCI accreditation, it was the right time to implement a PM tool such as the BSC. Such stepwise approach to performance improvement has also been recommended elsewhere (Ruiz and Simon, 2004). Therefore in consultation and consensus with the hospital medical director, senior faculty and staff, preparations for launching BSC in few clinical units of the hospital began and this later paved the way for the four studies which are a part of this thesis now.

The clinical department in which this study was conducted has 8 subspecialty sections with 54 full-time faculty members (49 male, 5 female) and 67 residents (trainees) of which 40 were male and 27 female. A faculty is a trained person with relevant qualifications and experience commensurate with their academic rank (Senior Instructor, Assistant Professor, Associate Professor and Professor). Major faculty assignments in clinical departments include teaching, research and clinical services. Staff positions are usually administrative non-academic positions, whereas trainees are qualified physicians completing their postgraduate clinical training as part of a regular certified postgraduate medical curriculum. This clinical department was selected as the study site for study II and IV, because it already had (i) a functional strategic plan, (ii) willingness to participate and (iii) comparable clinical units/subspecialties which could serve as viable sites for BSC implementation.

It is noteworthy to mention that a clinical department at this institution refers to a large academic entity with responsibility for teaching, clinical services and research in a particular clinical discipline. It usually comprises of various subspecialty sections that offer independent clinical services but all sections administratively report to the department.

### 5.2 BSC IMPLEMENTATION AND DATA COLLECTION TECHNIQUES

The studies on BSC were launched in 2006. In order to gain a better understanding of BSC use in HICs and to translate experiences to LIC setting (such as Pakistan), a systematic review (Study I) was conducted in first and second quarter of 2006. This review identified organizational culture assessment (Study II) as a pre-requisite to BSC application. Therefore in 3rd quarter of 2006, a culture assessment was done in all sub-specialties of the clinical department which was selected to be the study site. Pretesting of the culture assessment questionnaire was done in another clinical department. In the last quarter of 2006, an institutional level BSC was designed (Study III) using data from hospital HMIS (Health Management Information System).

#### 5.2.1 BSC Implementation

BSC implementation unfolded in several steps. In 2007-08 results from study I, II, III were organized into draft manuscripts for publication in peer reviewed journals. Based on preliminary results, an institutional level report was also prepared and shared with the hospital administration. The next step was to formally present the results of study I, II, III to the
clinical units who had been earlier involved in the study. Following this sensitization formal BSC application took place in 4 clinical units in 2008-2009 for 12 months; the first study unit was the department in which pretesting of the culture assessment was conducted earlier, while the remaining three study units were subspecialty sections of the main study department. The authors facilitated restructuring existing management meetings around the scorecard and also assisted to schedule separate monthly scorecard meetings in these units. This resulted in the development of a customized BSC for each of the 4 clinical units and a reporting of performance indicators based on BSC. The latter was considered as the endpoint of implementation for the purpose of study IV. A participant observation diary kept record of interactions during these meetings. Following a 12 month implementation, key informant interviews were conducted in 2009 to determine staff perceptions about the contextual barriers and strategic processes involved in BSC implementation. Information obtained through earlier survey, participant observation of meetings and post hoc key informant interviews was triangulated to understand the strategic processes and contextual barriers of BSC implementation (Study IV).

Figure 5: Timelines for data collection
5.2.2 Systematic review (I)

In Study I, we chose to conduct a specific type of literature search called systematic review. Systematic review research methods efficiently integrate existing information and provide reliable data for rational decision making across settings (Higgins and Green, 2005; Hyde et al., 2005; Mulrow, 1994). Study I utilized the principles of systematic review to understand the experience of BSC in both high and low income settings. This included a priori definition of inclusion criteria, search terms and an explicitly designed data extraction form (appendix).

Using the search term “Balanced Scorecard health” and “Balanced Scorecard health care settings” multiple electronic data bases were accessed to review articles published in peer reviewed journals. We got 530 citations from review of Pubmed and ‘related articles’ search. Embase yielded 101 citations of which 78 had already been covered in Pubmed. Google scholar prompted 5090 hits of which 978 could be accessed on the web. Of the latter only 157 were journal articles while others were books, web links or conference proceedings and were hence excluded. Thus our database matching the search strategy included 710 citations.

A health care setting was defined to include all types of facility-based and outreach facilities both in public and private sector including specialized services. It could range from primary health care units to tertiary hospitals, academic institutions, national health systems, community networks, nongovernmental organizations (NGOs) etc. For systematic reviews or meta-analysis on the subject, we consulted the Cochrane Library (Cochrane Database of Systematic Reviews-CDSR, database of abstracts of Reviews of Effects (DARE). All the 48 registered Cochrane review groups have a focus on clinical trials and outcomes. On the internet we found access to lot of private consulting firm’s websites for assisting with development and design of BSC using various toolkits (Rohm, 2002) however they were not designed to respond to our study aim and usually had white papers (grey literature). Contacting first authors of studies for published material on use of BSC in low income health care settings yielded personal opinions and these authors have been acknowledged in study I.

5.2.3 Cross-sectional survey using questionnaires (II, IV)

Survey is a quantitative data collection technique in which information can be collected through various methods and used to establish generalizable and often causal statements about the research question (Gable, 1994).

Written survey assessing respondent’s perceptions were used for study II, IV. Quality Improvement Implementation Survey -II (QIIS-II) questionnaire was the study instrument (appendix). This instrument is copyrighted by Health Policy and Management, School of Public Health, University of California, Berkeley and permission was obtained to use it for the purpose of these studies. The first part of the questionnaire establishes a cultural typology, based on a validated 20-item self-administered questionnaire (Zammuto and Krakower, 1991). It was completed for 8 subspecialty units of the clinical department under study with pretesting in another clinical department. The questionnaire was administered in English when faculty and residents were gathered for their routine monthly meetings. The instrument
is based on competing values framework (CVF) involving underlying dimensions of flexibility/control and external versus internal orientation (Quinn and Kimberly, 1984). CVF articulates four basic cultural types. Based on norms of affiliation, group (clan) culture implements change through consensus building and teamwork. Developmental (open) culture emphasizes growth, risk taking and innovation. In contrast, hierarchical (bureaucratic) culture reflects the values and norms of bureaucracy. Finally, rational/market cultures assume achievement through planning, productivity, task completion and efficiency (Cameron and Quinn, 2006). Mean culture typology scores were obtained, aggregated and reported for the entire department under study.

The second part of this questionnaire (study II) is also called Baldrige Implementation. It is an instrument developed by Dr. Stephen. M. Shortell (Shortell et al., 1995). It measures perceptions about quality care implementation (Shortell et al., 2001). The instrument uses 58 items to define seven dimensions measuring employee perceptions about quality of care implementation. These are: leadership, information and analysis, human resource utilization, strategic quality planning, quality management, quality results and customer satisfaction. After pre-testing this questionnaire, it was decided to abridge the questionnaire and make the exercise simple. The specific domains pertaining to quality and patient satisfaction were excluded because in the context of this hospital specific teams are already working to generate this type of data. Moreover during pretesting it was learnt that staff and trainee residents were not a good resource to provide feedback on these domains. Therefore information was collected from faculty only on the three domains: leadership, information and analysis, and human resource utilization. No change in the content of the scale items was made.

5.2.4 Modified Delphi Technique (III)

Formal consensus methods are a set of techniques that synthesize expert or stake holder opinion to guide and prioritize group decisions in situations where information is lacking, contradictory or where there is an overload of information (Campbell et al., 2002). Three main methods have been used in the health field: the Delphi, the Nominal Group Technique and the Consensus Development Conference. The comparative advantage of the Delphi technique over other strategies is the enhanced opportunity for all participants to contribute greater number of ideas than other group processes, minimizing domination of the process by more confident or outspoken individuals (Murphy et al., 1998).

Institute of Medicine (IOM) has defined criteria for guiding selection of leading health indicators (Institute of Medicine, 1999). According to IOM the indicator should be worth measuring, should be valid and reliable, easily understandable, be able to galvanize action and furnish tangible results over time. Recently an OECD Healthcare Quality Indicator (HCQI) Project judged its indicators against the IOM criteria and retained only those which met these criteria (Marshall et al., 2006). The same criteria were used in study III for a multistage modified Delphi consensus process. Face to face panel discussions with experts in the field were conducted and face validity of indicators established. The face validity of the indicators
was defined as whether its meaning and relevance to the assessment under consideration was self-evident and it superficially appeared to measure what it was supposed to measure (McBurney, 2001). A panel of nine experts was selected from the study hospital based on guidelines of the Delphi technique (Campbell et al., 2002). The group of experts was identified from a variety of professional disciplines and the required range of professional backgrounds. The panel represented hospital domains of marketing (managers who conduct quarterly patient satisfaction surveys), clinical quality assurance (clinicians, physician and nurse managers who monitor quality care indicators), human resource management (staff and managers who conduct annual staff satisfaction surveys) and budget and planning (financial managers furnishing financial reports). It was ensured that experts committed time and involvement until the process was complete.

5.2.5 Case study as a research method (IV)

A case study approach is the method of choice, when results are mostly descriptive, organizational phenomena under exploration are complex and current state of knowledge in the field is limited (Yin, 2003). Since the implementation of BSC at organizational level was being monitored with how/why type of questions in a real life situation, guided by theoretical prepositions, focusing on contemporary events, covering contextual conditions in a real life setting with low control over the independent variables, case study was chosen as the preferred research method for Study IV.

A case study is closely linked to the context in which it is being studied. The case study is thus a research tool valuable for understanding dynamics present within a specific setting. Acknowledgement of the need to incorporate the contextual setting is a new emphasis in Balanced Scorecard literature (Kaplan and Norton, 2000). The latter believe that strategy requires basic changes in the way of conducting business and it must be executed through individuals at all levels of the organization as prerequisites to implementing the BSC.

Case studies can be generalized against theoretical propositions. For this reason theory development prior to the collection of any case study data is an essential step (Yin, 2003). Later it is used as a template with which to compare the empirical results of the case study. Using Pettigrew’s framework we based our data collection approaches in Study IV on a series of sub questions to analyze the context of BSC implementation. Our sampling method was designed to provide examples of WHY, WHAT and HOW in clinical units implementing the BSC.

5.2.6 Participant Observation (IV)

Participant Observation is considered as a data collection technique which can be used within case studies. Observations can range from formal to casual data collection and often serve to provide first hand information about a contemporary phenomenon, uncovering hidden activities and highlighting contextual sensitivity (Pålsson, 2007). Moreover it provides in-depth additional information about the topic being studied (Yin, 2003). The behaviour of the group is explored by observing conversations within the group. The primary researcher and
the research intern were present in all meetings and used paper and pencil to note observations in the diary. This text is based on 40 meetings held in the 4 clinical units over a span of 12 months. A thorough documentation ensured that all meetings held by Unit I-IV were minuted and that a record of staff participating in BSC implementation and typical issues discussed was available.

It is to be noted that of these 40 meetings, some meetings (the monthly unit meetings) were large gatherings with over 25 participants. Some smaller specific meetings of the project working group with core staff from each unit were also conducted. To avoid ethical issues and avoid undue suspicion, the researchers honestly explained their role before each meeting. In the large staff meetings it was clarified by the head of the unit that the researchers were there to observe the interactions as the process of BSC implementation proceeds. In the smaller working group meetings the researchers had a more proactive role in helping the unit staff design their customized scorecards. The textual notes from the participant observation diary reveal the inter-organizational barriers, social and personnel contexts, managerial support systems and resource ties associated with BSC implementation. Non verbal behaviours were also noted.

5.2.7 Semi-structured interviews with key informants (IV)

Semi-structured interviews allow for a conversation to be developed around the area of interest and flexibly modify the line of enquiry. Interviews also encourage the respondent to discuss the topic using their own words and are excellent for documenting people’s reasons for their behavior and their understanding or misunderstanding of issues (Dahlgren et al., 2004). This was an important feature in our study as we explored stakeholders’ own perceptions of how Balanced Scorecard is being implemented using an interview guide (appendix). The latter has been developed using the Pettigrew and Whipp’s theoretical framework of strategic change and addresses the HOW, WHAT and WHY aspects of BSC implementation.

Semi-structured interviews of a selected sample of 12 key informants were conducted in 2009. The average duration of each interview was approximately 30 minutes. A written informed consent was obtained prior to each interview. Interviewees were assured that their personal identity would be kept confidential. Selection criteria for these key informants were that they should be knowledgeable about how the BSC was chosen, designed and implemented. Our key informants included 9 faculty of the implementing units (of which 3 were women), 2 senior female nurses (both involved in clinical services across all the four units) and 1 departmental manager (male) who was present in most of the meetings. Interviews were mostly conducted in the office of the interviewees by the principal investigator and a research intern ensuring complete privacy. The research intern had her laptop with her to type the responses. After conducting these 12 interviews it was found that no new information could be extracted about the strategic processes and contextual challenges of the BSC implementation process and that thematic saturation had been obtained.
Since these interviews were conducted post hoc specifically to complete data triangulation in this case study, a separate ethical approval was obtained in 2009 to conduct them.

5.3 DATA ANALYSIS

5.3.1 Systematic review (I)

Following search of electronic databases in Study I, a data extraction form was devised specifically for this study in a usable format applying standard “systematic reviews data extraction guidelines” (Pai et al., 2004). This form was used to analyze the 326 articles which met our inclusion criteria. The latter included studies that directly related to BSC design and implementation and others that captured many themes closely related to BSC principles. All studies were further analyzed for evaluating the applicability of BSC to the contextual background of LIC using the recognition model developed by National Committee for Quality Assurance (NCQA). The recognition model uses criteria of feasibility, objectivity, cost-effectiveness and sustainability for performance assessment and quality improvement (NCQA, 2006). It is considered a good fit for LICs seeking to adapt viable and tested approaches for evaluating and improving delivery of healthcare in their own settings.

5.3.2 Analysis of quantitative data obtained through survey (II, IV)

Prescribed standard procedures for data collection and scoring were followed as per the original QIIS-II questionnaire. In Study II, the respondents (faculty and residents) were required to indicate the extent to which their department reflects characteristics associated with each culture type mentioned above. They were asked to “share 100 points” between the four descriptions. The standard formula for calculating the culture typology which has also been used in other HIC studies was applied (Cameron and Freeman, 1991; Davies et al., 2007; Deshpande et al., 1993; Lee et al., 2002; Shortell et al., 1996; Shortell et al., 2000; Shortell et al., 2004; Shortell et al., 1995; Shortell et al., 2001). Collating these point allocations provided a score (in the range 0 to 100) for each individual on the four cultural types. Mean, range, and inter-quartile values for each typology were computed using SPSS (SPSS 14.0 for Windows, Chicago, IL USA). In study IV, further analysis was done on the same survey data to furnish mean culture typology scores for each of the four implementing units separately. This helped to better understand the cultural context of BSC implementation.

Besides culture typology, perceptions about quality care implementation were also measured in study II using QIIS-II questionnaire. Information was collected on (i) leadership: 11 items measuring the extent to which senior executives’ personal leadership and involvement creates and sustains clear visible quality values; (ii) information and analysis: 7 items measuring the extent to which the scope, management and use of data was perceived to drive quality excellence; and (iii) human resource utilization: 8 items measuring the extent to which employees were educated and trained on quality improvement. This exercise also serves as a proxy for employee satisfaction.

As in the previous studies (Cameron and Freeman, 1991; Davies et al., 2007; Deshpande et al., 1993; Lee et al., 2002; Shortell et al., 1995), participants were asked to respond to a series
of scale items within each domain, indicating the extent to which they agreed or disagreed with the statement by ticking in the appropriate box (1 = Strongly Disagree, 5 = Strongly Agree). The same standard formula was used for calculating individual scores for each domain as has been used in these studies.

SPSS (SPSS 14.0 for Windows, Chicago, IL USA) was later used to calculate means scores and Cronbach’s alpha for the items in each of the three domains mentioned above. Later Pearson correlation coefficients were computed between means of the four culture typologies and average scores of the three quality care domains.

5.3.3 Application of modified Delphi technique (III)

In order to select indicators for BSC, the modified Delphi consensus process in study III used the standard criteria developed by RAND (Marshall et al., 2006). This includes; (i) importance, (ii) scientific soundness (credibility), (iii) appropriateness to hospital’s strategic plan, (iv) feasibility (i.e. whether the measure was available easily as part of management information system, could be collected accurately, reliably, and at a reasonable cost); and (v) modifiability of the clinical outcome measures. Each indicator was rated on a scale of 1-9 for the above criteria. Median scores and measures of disagreement for the whole panel and individual ratings were discussed, in subsequent meetings.

Panel members were given an opportunity to change their ratings after the discussions. Indicators receiving final scores of 7-9 were regarded as robust, 4-6 as equivocal, and 1-3 as weak. All indicators receiving scores of 7 or more (face validity) were included in the final set. In addition, a small number of indicators which received scores of 4-6 were retained if the panelists considered the indicators essential to contribute to the overall balance and comprehensiveness of the final set. Twenty indicators (receiving a median score of 7 or more) were finally selected and organized by the expert panel into the four BSC quadrants.

5.3.4 Participant observation and key informant interviews (IV)

For the purpose of Study IV qualitative ‘content analysis’ was done. It is a well-developed and widely used method in social sciences with an established pedigree (Dixon-Woods et al., 2005). Data abstraction, emphasizing actual communications (manifest content), descriptions and interpretations on a higher logical level (latent content) with the creation of codes, categories and themes was done. For the key informant interviews the unit of analysis was the interview text and for participant observation the meeting diary.

As a next step descriptive codes were abbreviated on the left-hand margin of the interview text. A short sheet was then prepared that listed page numbers devoted to particular items, which later became subheadings in the text. Once the interviews and observation diary were coded, a simple storage and retrieval system was designed in QSR Nvivo software 2.0 so that researchers could easily locate relevant items of information, each in a separate folder.
5.4 ANALYSIS OF CASE STUDY (IV)

5.4.1 Triangulation of Methods
Triangulation of methods gives multiple perceptions which can clarify meaning and verifies the repeatability of observations (Stake, 2005). Reflections and reporting based on both field notes from participant observation studies and other empirical data such as interviews is emphasized in ethnographic studies (Pålsson, 2007). In study IV, all sources of evidence (survey, participant observation and key informant interviews) were reviewed by the primary researcher, research intern and one other research team member. Data was analyzed together, so that the case study findings were based on convergence of information from these three sources. Unclear responses and contradictory reports obtained during key informant interviews were checked with participant observation text and by sharing draft notes with key informants. Moving between these two venues (interviews and observations) allowed for frequent independent reflection and then discussions with other involved project members. The evolution of discrete themes could therefore be explored and either confirmed or refuted. Themes were only retained when more than 5 respondents described the same items in key informant interviews and then the same was confirmed by analysis of participant observation texts. Findings from quantitative surveys were also consulted to highlight the cultural context of BSC implementation.

5.4.2 Relying on Theoretical Propositions
Data collection and research questions for Study IV were guided and predicted by the three dimensions of Pettigrew’s theoretical framework. The same theoretical orientation guided the case study analysis to arrive at emergent themes with methodological triangulation. Though only some aspects of Pettigrew’s dimensions were taken into consideration even then the framework helped to focus attention on key data to answer the How, What and Why questions.

The results and discussion section of this thesis present in detail how the key findings of study IV were used and interpreted using the PGF lens.

5.4.3 Addressing Alternative Explanations
Besides the coding categories which were guided by the Pettigrew’s framework in Study IV, the researchers actively looked for actual comments of the informants or proceedings of the meetings to explore other areas and come up with new perspectives as well.

5.4.4 Comparative Case Analysis
Following the description of generic themes emerging through methodological triangulation (Study IV), we also compared and contrasted BSC implementation in these 4 units. Despite many similarities, these four clinical units differed on several aspects as described in the results section.
5.5 ETHICAL CLEARANCE

The study was submitted and approved by the institutional ethical review committee of the study hospital as part of larger package of studies on Balanced Scorecard (vide ERC 464-CHS/ERC-05) and later given another approval (vide ERC 1297-CHS/ERC-09).

Institutional consent and support was a part of this project throughout the execution of the four studies. The study subjects were institutional employees (senior staff & faculty). Participation in survey and interviews was purely voluntary and without any monitory compensation. There were several queries on the purpose and institutional utility of this project however no refusals to either fill in the survey questionnaire or consent to the key informant interviews were noted.

To avoid sensitivity none of the key informant interviews were tape recorded. Interviewees had the right to skip any question they did not wish to answer or to withdraw from the interview at any point. The ethical committee particularly suggested written informed consent before interviewing the key informants. Interview transcripts were shared with interviewees before coding for the purpose of qualitative analysis. A draft was given to all key informants prior to submission of manuscript pertaining to study IV.

Since study II establishes a cultural typology based on perceptions of the employees about their workplace and study IV probes organizational barriers, some individual participants and units were reluctant to contribute occasionally. Reassurance was therefore required from time to time to clarify that survey and interview data will only report group analysis and their personal identity or clinical unit affiliation will not be revealed. This shows the importance of periodic sensitization to the objectives of the study and highlights challenges of conducting research in one’s own organization.

A summary of all methods used in this thesis is presented in Table 4.
<table>
<thead>
<tr>
<th>Title of Study</th>
<th>Methods</th>
<th>Study population and Sample Size</th>
<th>Study Period</th>
</tr>
</thead>
</table>
| I. Reviewing the Application of the Balanced Scorecard with Implications for Low-income Health Settings | • systematic review  
• search of electronic databases | - 710 articles in the search  
- 326 included  
- 44 regarding BSC in healthcare  
- 282 related to other themes | 1st quarter 2006       |
| II. Culture and Quality Care Perceptions in a Pakistani Hospital            | • written surveys assessing respondent’s perceptions about culture and quality care  
• using validated questionnaires | - 64 faculty and residents for culture typology questionnaire  
- 48 faculty for quality improvement questionnaire | 2nd quarter 2006     |
| III. Designing a Balanced Scorecard for a tertiary care hospital in Pakistan: A Modified Delphi Group Exercise | • multistage modified consensus process developed by RAND – modified Delphi technique | - panel of nine experts representing hospital domains of marketing, clinical quality assurance, human resource management, and budget and planning | 3rd and 4th quarter 2006 |
| IV. Context of BSC implementation in a private Pakistani hospital: a case study | • case study  
• survey  
• participant observation  
• semi structured interviews | - 64 staff for survey  
- 40 meetings for participant observation  
- 4 clinical units  
- 12 key informant interviews | 3rd quarter 2008-3rd quarter 2009 |
6 RESULTS

6.1 FEASIBILITY OF BSC IMPLEMENTATION IN LIC (I)

Study I assessed the feasibility of implementing BSC in LICs based on experiences in HICs. Using the specified search terms and review methodology, 44 articles were found to be of direct relevance. Of these 34 were actual descriptions (case studies) of BSC implementation in various health care settings, one was a review (Zelman et al., 2003) and 9 were related to BSC design and principles.

There were 282 articles which do not report using a formal BSC but use tools, performance measurement techniques and indicators quite similar to the BSC framework. Most common themes were centered on quality of care initiatives and organizational management. The majority (188) of these articles were from HICs while the remaining 94 were based on experience and context of LICs. The latter provided information for commentary while comparing experience of BSC in HIC against contextual realities of LIC.

It was found that use of BSC is spread over a broad range of health care settings with great diversity and concentrated in the HICs (United States mainly). Besides its application for strategic management it appears that these health care organizations have used BSC for public information, clinical pathways, hospital department performance, women’s quality of care, outcome measurement, managed care evaluation and performance measurement of a consortia of hospitals (Inamdar et al., 2000; Jones and Filip, 2000; Zelman et al., 2003). The traditional four perspectives of BSC (mentioned in section 1.6) were thus quite amenable to modification. Most of the organizations that used BSC report an improvement in all four traditional quadrants of BSC. Two large scale health sector applications of the BSC were found for acute care hospitals in Ontario Canada and critical access hospitals in the US (Zelman et al., 2003). A third dimension of NHS Trust hospitals UK was added to this in order to enhance the body of evidence (study I). Although all three applications are based on theory and concepts of BSC, they are different in their approaches and thus make an interesting comparison and contrast.

Using the criteria developed by the National Committee for Quality Assurance (NCQA) for improving quality of services in low and middle-income countries (NCQA, 2006), we contextualized application of BSC in LICs (Table 5).
Table 5: Analytical framework for translating BSC experience from high to low income settings

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>COMMENTARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits</td>
<td>BSC has resulted in improved and effective health care in HIC. Interest, ability to report, respond and compliance to performance measurement is however questionable in LIC.</td>
</tr>
<tr>
<td>Feasibility</td>
<td>In HIC basic requirement for BSC implementation turned out to be infrastructure for valid, comprehensive and timely information system. This is currently lacking /of low quality in LIC</td>
</tr>
<tr>
<td>Objectivity</td>
<td>BSC was designed in HIC using established guidelines and strategic plans. This shows that BSC has a basis in science not in individual judgement. However most LIC do not have operational strategic planning in place</td>
</tr>
<tr>
<td>Cost-effectiveness</td>
<td>BSC has been applied in HIC at a single health outlet or a larger health system with minimal training and input. Even then the issue of costs is a major constraint in under-resourced systems.</td>
</tr>
<tr>
<td>Sustainability</td>
<td>BSC was designed by program staff themselves in HIC based on needs. However accountability systems are weak in LIC and sustainability may be an issue</td>
</tr>
</tbody>
</table>

Adapted from: NCQA recognition model on quality assessment and improvement in low and middle-income countries
Source: Hibbard et al., 2005; Langenbrunner and Liu, 2005; McIntyre et al., 2001; McNamara, 2006; Mehrotra et al., 2003; Siddiqi et al., 2005; Smits et al., 2002; Unger et al., 2003; Bhat, 1996; Bourne 2000; Grol, 2001; Brown et al., 2001; Nandraj et al., 2001

Summary: Any direct evidence describing BSC use in a low income health care setting or why such an implementation is hindered or how it could be facilitated was not available at the time of this systematic review. The articles that described BSC use in HICs were all individual case studies and not designed to evaluate BSC outcomes. Regarding experience of using BSC in HICs, it was observed that theory and concepts of BSC have been applied among all types of health care organizations and on a large scale. Committed leadership, quality information systems, viable strategic plans, and optimum resources emerged as required prerequisites for BSC implementation. It is however to be noted that even within LICs there are pockets of relatively less deprivation where the required BSC prerequisites may be fulfilled. Cautious implications for BSC adaptability in LICs however need to be drawn. An organizational cultural assessment must precede BSC implementation

6.2 UNDERSTANDING CULTURE OF STUDY SITE (II)

Part I of QIIS-II questionnaire was used for cultural assessment in 8 subspecialty units of the study department (study II). A mix of all four cultural types (group, developmental, hierarchical and rational) was observed in study II. There were sixty-four respondents. The predominant perceived cultural type was hierarchical for which the mean was 37.2. The
means of other cultural types were; group 17.5, developmental 13.7 and rational 31.7. The inter quartile range of various culture typologies is shown in Figure 6.

![Boxplot of Total Score by Culture Type](image)

**Figure 6: Interquartile range of cultural types: study in a Pakistani hospital:**

Forty-eight faculty completed the part II of QIIS-II questionnaire. Quality improvement measures in three domains (1) *leadership*, (2) *information and analysis*, and (3) *human resource utilization* were assessed. Separate mean scores for each of the three domains were computed. Human resource utilization got a mean score of 3.39 (relatively low) as compared to 3.65 for leadership, and 3.50 for information and analysis. Cronbach’s alpha for the three domains ranged from 0.80-0.81. Previous studies show that the Cronbach’s alpha for the domains ranged from 0.79 to 0.93 (Shortell et al., 1995). This suggests a high degree of internal consistency (Bland and Altman, 1997; Nunnally, 1978).

Correlation between the domains and perceived culture types demonstrate that high scores of leadership corresponded positively with group ($r=0.48$, $p<0.00$) and developmental culture ($r=0.55$, $p<0.00$). On the other hand, hierarchical (bureaucratic) culture was significantly negatively correlated with all three domains; leadership ($r=-0.61$, $p<0.00$), information and analysis ($r=-0.50$, $p<0.00$) and employee satisfaction ($r=-0.55$, $p<0.00$). This signifies that those who perceived the culture to be bureaucratic also gave lower rating to leadership in maintaining a quality culture and to employee’s satisfaction with quality care implementation.
Summary: There was a mix of all culture types observed in the study department with predominant characteristics of hierarchical culture. A positive linkage between participatory and open culture and perceptions about leadership and quality improvement efforts was noted. There was an expressed need among employees for improving reward and recognition processes for contribution in quality improvement efforts. Transitioning from traditional hierarchical to more partnership-based (group) culture with greater integration between point-of-service staff and administrators was recommended.

6.3 DESIGNING THE BSC USING FORMAL CONSENSUS TECHNIQUE (III)

In line with recommendations of study II for greater integration, an expert multidisciplinary panel was involved in selecting indicators and designing the BSC (study III). A modified Delphi group technique was used to reach consensus about indicators for an institutional level BSC. Designing the BSC was possible in study III because most of the necessary prerequisites for successful BSC implementation in LICs (identified in study I) were already in place. Moreover, an assessment of organizational culture had already been conducted (study II). Following an extensive review of existing internal documents (periodical quality assurance, patient and employee satisfaction surveys and financial reports), a preliminary list of 50 indicators was formulated in line with hospital’s strategic plan. No indicators were removed from consideration at this phase of the activity. The next step was to prioritize key performance indicators based on the criteria described in section 5.3.3. The panel used the modified Delphi technique during face to face meetings to individually rate each indicator on a scale of 1–9 for the above criteria. All criteria were given equal weightage. Twenty indicators (receiving a median score of 7 or more) were finally selected (Table 6). These indicators were distributed across all 4 quadrants of BSC: financial perspective (n=4), internal business (n=7), human resource perspective (n=5) and patient satisfaction perspective (n=4).
### Table 6: Shortlisted set of indicators for the BSC using the modified Delphi technique

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Perspective (FP)</strong></td>
<td></td>
</tr>
<tr>
<td>• Average charges (inpatient)</td>
<td>8.00</td>
</tr>
<tr>
<td>• Length of stay (inpatient)</td>
<td>7.00</td>
</tr>
<tr>
<td>• Daily census (inpatient)</td>
<td>8.00</td>
</tr>
<tr>
<td>• Net operating margin</td>
<td>9.00</td>
</tr>
<tr>
<td>• <strong>Overall FP Median</strong></td>
<td>8.00</td>
</tr>
<tr>
<td><strong>Internal Business Perspective (IBP): Clinical Outcomes (efficiency and quality)</strong></td>
<td></td>
</tr>
<tr>
<td>• Laboratory report turnaround time</td>
<td>8.00</td>
</tr>
<tr>
<td>• Radiology film rejection rate</td>
<td>8.00</td>
</tr>
<tr>
<td>• Unplanned stay after daycare procedure</td>
<td>7.00</td>
</tr>
<tr>
<td>• Incidence of blood transfusion reaction</td>
<td>7.00</td>
</tr>
<tr>
<td>• Nosocomial infection</td>
<td>8.00</td>
</tr>
<tr>
<td>• Cross match to transfusion ratio</td>
<td>7.00</td>
</tr>
<tr>
<td>• Needle stick injuries</td>
<td>8.00</td>
</tr>
<tr>
<td>• <strong>Overall IBP Median</strong></td>
<td>8.00</td>
</tr>
<tr>
<td><strong>Human Resource Perspective (HRP)</strong></td>
<td></td>
</tr>
<tr>
<td>• Satisfaction with job</td>
<td>7.00</td>
</tr>
<tr>
<td>• Satisfaction with colleagues</td>
<td>8.00</td>
</tr>
<tr>
<td>• Satisfaction with on campus facilities</td>
<td>8.00</td>
</tr>
<tr>
<td>• Satisfaction with organization</td>
<td>7.00</td>
</tr>
<tr>
<td>• Satisfaction with supervisors</td>
<td>7.00</td>
</tr>
<tr>
<td>• <strong>Overall HRP Median</strong></td>
<td>7.00</td>
</tr>
<tr>
<td><strong>Patient Satisfaction Perspective (PSP)</strong></td>
<td></td>
</tr>
<tr>
<td>• Satisfaction with physicians</td>
<td>7.00</td>
</tr>
<tr>
<td>• Patient Complaints (inpatient)</td>
<td>8.00</td>
</tr>
<tr>
<td>• Satisfaction with nursing services</td>
<td>7.00</td>
</tr>
<tr>
<td>• Proportion of patients recommending this hospital to their families and friends</td>
<td>8.00</td>
</tr>
<tr>
<td>• <strong>Overall PSP Median</strong></td>
<td>7.50</td>
</tr>
</tbody>
</table>

**Summary:** BSC compels individual clinicians and managers to jointly work towards improving performance. The Delphi group process led to a pragmatic interpretation of existing data resulting in the design of a scorecard with comprehensive indicators in multiple dimensions A need for stringent definitions, international benchmarking and standardized measurement methods was identified. This scorecard is now ready to be implemented by this hospital as a performance management tool.
6.4 CONTEXTUAL IMPLEMENTATION OF THE BSC (IV)

The context of BSC implementation in four clinical units is examined in Study IV. Using the lens of Pettigrew’s framework (context, process, content), five interrelated themes were identified through data triangulation which provided common and contrasting results between the four units that implemented the BSC. These were; factors supporting BSC implementation, barriers to BSC implementation, sensitization to BSC benefits, strategies to implement BSC and cultural values. Alternative explanations to complement the understanding of BSC implementation were also considered.

Importance of organizational support (context) with regard to financial and non-financial incentives and prior work experience on quality care initiatives were highlighted as facilitating factors for BSC implementation. Some of the BSC contextual barriers that emerged in all of the units were clinical workload, lack of national performance management initiatives to provide benchmarks for comparison, leadership not able to communicate a clear BSC agenda, lack of designated human resources and ill-defined staff roles in BSC implementation. Another contextual factor observed was that if staff were appropriately sensitized to BSC benefits it had a positive impact on implementation. Since the first and second study units were possibly able to grasp the advantages of BSC quickly, implementation began sooner. The third unit had a delayed start as it failed to understand the added value of BSC initially. Moreover, the designated staff had anxieties and fears that this new requirement of BSC based performance reporting would be very time consuming. The fourth unit only remained in a preparatory phase and could not enter actual implementation.

Some of the strategies which assisted in proceeding with BSC implementation (process) included; providing designated staff for monitoring of BSC indicators, ownership from all staff, leadership communicating a clear agenda to implement BSC, reducing focus on generating profit and reporting of BSC indicators in routine unit meetings. BSC performance was closely linked with the prevalent culture and the changes brought about in unit’s climate (content). The culture types in the quantitative survey matched with what KIs believed the unit’s culture to be and what was concomitantly observed during meetings of the unit. It was noted that in the first and second study units that had predominantly participatory cultures, the BSC implementation was enhanced. By contrast the third and fourth units (predominantly bureaucratic and goal-oriented culture) lagged behind in BSC implementation. The third unit’s relatively bureaucratic style prevented an early BSC implementation; the leadership of the unit appeared interested but was derogatory in assigning tasks to unit’s staff. The culture of the unit slowly started showing signs of team work once BSC continued to appear on the agenda of their regular meetings. This is evident from the fact that towards the end of implementation period, the designated staff took on the responsibility and ownership for BSC based performance reporting in their monthly unit meetings.

A summary of these findings is presented in Table 7.
### Table 7: Data triangulation based on Pettigrew’s framework

<table>
<thead>
<tr>
<th>Context</th>
<th><strong>Research Question</strong></th>
<th><strong>Selected Quotes (Key Informants)</strong></th>
<th><strong>Observations (Meetings)</strong></th>
<th><strong>Culture type (Survey)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Why do these units wish/not wish to implement BSC?</td>
<td><em>Driving force should be there in the form of promotions, co-authorship etc (Unit I, II)</em>&lt;br&gt;* We don't have anyone in the unit to be able to work on this (Unit IV)<em>&lt;br&gt;</em> A hindering force in our unit is that people are overworked (Unit II, IV)<em>&lt;br&gt;</em> We do not have ready access to all data (Unit III, IV)<em>&lt;br&gt;</em> BSC reduces adhoc reporting and improves outcomes (Unit II).</td>
<td><em>Unit I, II were looking forward to non financial incentives to implement BSC&lt;br&gt;<em>Unit III, IV more inclined towards financial incentives and attending to clinics&lt;br&gt;</em> Lack of designated human resources, access to required information and time constraints were major barriers in Unit III, IV&lt;br&gt;</em> Sensitization to BSC benefits facilitated implementation in unit II</td>
<td>Unit I=Group and Rational&lt;br&gt;Unit II=Group and Development&lt;br&gt;Unit III=Hierarchical and Rational&lt;br&gt;Unit IV=Rational and Hierarchical</td>
</tr>
<tr>
<td></td>
<td>How do these units implement BSC?</td>
<td><em>Our head has told us that BSC will give us the right opportunity (Unit II)</em>&lt;br&gt;* We are already using BSC but we don’t call it so (Unit I)*</td>
<td><em>Facilitatory factors were; role alignment &amp; leadership communicating clear agenda for BSC (Unit I, II)</em>&lt;br&gt;* Introducing BSC as on ongoing activity /small scale (Unit I, III)*</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td>What changes were made in the unit to facilitate BSC</td>
<td><em>What is required is a more participatory culture (Unit I).</em></td>
<td>Unit I, II team-oriented Unit III, IV; derogatory style of leadership</td>
<td>Same as above</td>
</tr>
</tbody>
</table>

Source: All information related to key informants and participant observation has been extracted from content analysis of emergent themes as reported in study IV.

**Summary:** Making the culture more participatory, presenting clear direction integrating support for BSC in policies, resources and routine activities emerged as desirable attributes. Role clarification and consensus about the purpose and benefits of BSC were noted as key strategies for overcoming barriers related to BSC implementation in the first and second study units which were relatively ahead in BSC implementation as compared to the third and fourth unit. Moreover it was learnt that rather than seeking to replace existing information systems, initiatives such as the BSC could be readily adopted if they are built on existing infrastructures and data networks. It is anticipated that this experience regarding facilitatory factors and contextual barriers involved in BSC implementation can be useful for those intending to apply BSC in other health care settings.
7. DISCUSSION

I found that there is *conditional* possibility for the application of BSC in LIC hospital settings. A participatory organizational culture, proactive leadership, joint involvement of clinicians and managers and understanding of contextual barriers are important considerations as the BSC implementation unfolds.

The four sub-studies described in this thesis present a stepped approach to Balanced Scorecard application right from review of its feasibility, assessment of culture and leadership context, involvement of multidisciplinary teams in designing the BSC to studying the strategic processes and contextual barriers involved in implementation. In the following sections I discuss in more detail the key results from my studies.

7.1 FEASIBILITY AND PREREQUISITES FOR BSC APPLICATION

7.1.1 Feasibility of BSC in the HICs

*Study I* demonstrates increasing use of BSC in HICs. It was observed that the theory and concepts of the BSC have been applied among all types of healthcare organizations and on a large scale. The systematic review showed that BSC promoted integration and facilitation of clinical, operational and financial indicators in HICs with greater employee motivation and patient satisfaction, which is a goal that health care organizations in both HICs and LICs are today aiming for.

Though the review period in *study I* was conducted through 2006, about 30 additional studies on BSC in health care have been reported since then from HICs (Pubmed). Some recent applications have particularly emerged from Ontario, Canada and the Netherlands (Cheng and Thompson, 2006; Canizares et al., 2007; Young et al., 2008; Tawfik-Shukor et al., 2007). The Health Promoting Hospital Standards and Strategies Model, European Foundation for Quality Management (EFQM) Model and the Balanced Scorecard were collectively implemented in three acute care hospitals in four locations in Germany (Groene et al., 2009). The Campania Regional Government applied the BSC and was successful in overcoming the surmounting deficit incurred within the region’s health services (Impagliazzo et al., 2009). These studies complement the findings from *study I*, emphasizing that BSC application must be adapted to suit specific organizational contexts (Guifang, 2009). Hospitals initially used the BSC to avoid barriers such as financial pressure however BSC has since evolved to achieve the mission and vision of the organization as well (Schalm, 2008).

7.1.2 Feasibility of BSC in LIC and LMIC settings

*Study I* concluded that committed leadership, participatory culture, quality information systems, viable strategic plans, and optimum resources are essential prerequisites for BSC implementation. Despite the positive outcomes demonstrated in the HICs, caution was warranted in the use of BSC within the LIC health care settings. This caution is supported by the realities of health care systems in LICs and LMIC settings and can be explained by the
WHO health systems building blocks (Figure 1). In terms of health care financing, these countries spend less than US$ 34 per capita annually on health, and are marked by weak governance, bureaucratic culture and lack of accountability mechanisms (Nishtar, 2009; Siddiqi et al., 2009). Compliance to PM and maintaining quality information systems (requirement for effective BSC) can therefore be only partially feasible. Moreover lack of accountability impairs sustainability of initiatives such as the BSC. Health delivery systems lack quality and strategic planning due to which objectivity of the BSC will remain a challenge. Also with poor federal spending on health and constrained resources, cost-effectiveness of BSC is an issue.

At the time when study I was conducted no studies of BSC application in the context of LICs could be identified. An experience of using BSC has now been documented from Afghanistan where BSC has been applied at a national (macro) level by the Ministry of Public Health (MOPH) to demonstrate how provinces and the country are doing in delivering the basic package of health services (Peters et al., 2007). In the absence of a routine system to collect information on health services, the MOPH chose to initiate a program to monitor health services through household surveys and annual surveys of health facilities. There were obstacles to developing a BSC based on surveys, including the lack of a sampling frame, insecurity, bad roads and poor communications etc. Once operational, the BSC proved to be a useful tool to summarize the multidimensional nature of health services and enabled managers to benchmark performance and identify strengths and weaknesses in the Afghan context. Recently, in a Chinese hospital, BSC was integrated with an incentive plan in the nursing field resulting in improved performance (Chu, 2009).

These examples further support findings from study I. Due consideration to variable levels of feasibility is required while implementing BSC in LICs. It is to be mentioned that prior to launching the BSC it was anticipated that most of the desired prerequisites for BSC implementation i.e willingness of leadership, presence of good quality information systems, functional strategic plan and optimal resources are in place in this Pakistani hospital. Therefore study III used the current information data base to design the BSC and study IV was rolled-out as an implementation case study of BSC.

7.2 CULTURAL CONTEXT AND LEADERSHIP: KEY DRIVERS FOR BSC

7.2.1 The cultural context

Study I, identified organizational culture assessment as a key prerequisite prior to BSC application. Other studies also recommend that prior to rolling the BSC an assessment of ‘strategic readiness’ be conducted because success of BSC implementation will ultimately depend on the culture of the organization being appropriate and receptive (Kaplan and Norton, 2004; Schalm, 2008).

Using QIIS-II questionnaire cultural typology was established in eight subspecialty sections of a large clinical department at the study hospital. Studies have demonstrated that
participatory and developmental (open) cultures are drivers for better quality improvement work (Shortell et al., 2000; Shortell et al., 1995). An important finding in study II was that a mix of all four cultural types was present: group (participatory), developmental (open), rational (efficiency driven) and hierarchical (bureaucratic). The latter was the predominant type. These findings are consistent with previous studies pointing out that a combination of cultural traits co-exist and that in hospitals the mean scores of hierarchical culture are relatively high (Deshpande et al., 1993; Lee et al., 2002).

Findings from study IV show that there were two hospital units where the operational nature demanded more vigorous clinical service and long term responsibility for patient care. The other two units were geared towards short-term patient care with predictable end results (patient discharged, referred or dies within a 24 period of hospital stay). Interestingly the former units had more attributes of hierarchical and bureaucratic culture which may have restrained their understanding of BSC and its linkage to their strategic plan (Pettigrew’s internal context). In these two units the BSC uptake was relatively slow. Other researchers have also cautioned that in the absence of a participatory culture, BSC implementation is not likely to succeed (Mooraj et al., 1999). Existence of such hierarchies has been found elsewhere too to be particularly restrictive for BSC implementation process (Groene, 2009). Moreover in the first and second study units (with greater characteristics of participatory culture) there was a regular schedule of staff meetings. These meetings became a good venue to roll-out BSC implementation. The importance of having such frequent formal and informal meetings with employees and managers has been shown to drive a participatory culture leading to better BSC implementation and performance improvement (Amaratunga et al., 2001). As recommended elsewhere (Shortell et al, 1996; Naranjo-Gil, 2009), this thesis also indicates that group/developmental cultures need to be promoted in order to drive BSC integration efforts across the board.

7.2.2 The leadership context

Study II also demonstrated that those staff members who perceived the culture to be hierarchical, also had negative perceptions about leadership and quality improvement efforts. There is relatively little evidence regarding the nature of effective leadership required to pursue quality improvement across various managerial levels (Waldman et al., 1998). Pettigrew suggests that leadership abilities are important in initiating a transformation including changes in structure, strategy, cultural system and distribution of power (Pettigrew, 1988). Study I identified a committed leadership, study II a participatory leadership style and study IV leadership communicating a clear agenda for BSC as factors which drive BSC execution (Pettigrew’s internal context).

Study II discusses areas for improvement and suggests that in order to take the quality of care initiatives forward, leadership could consider acting on employee suggestions. It has been demonstrated previously that employees want a leader with a clearer leadership style than what the manager (leader) personally perceives as being accurate (Sellgren et al., 2006). It has also been reported that associations exist between cultural types and satisfaction with
managerial decision-making and between leadership behavior, work climate and job satisfaction in a Swedish hospital setting (Sellgren et al., 2007a). Thus, the type of leadership is a key driver for the pace with which quality care is initiated and sustained. Based on available management literature (Kaplan and Norton, 2000), it is recommended that leadership at this hospital needs to be transformational and energetic in order to implement the BSC strategic management system and to achieve a breakthrough performance.

7.3 DESIGNING THE BSC

7.3.1 Involvement of a multidisciplinary team in designing the BSC
To select indicators and design the scorecard managers from the departments of quality assurance, finance, marketing and human resource were actively engaged with clinicians (Study III). This stimulated dialogue and agreement among hospital's staff about desirable financial and nonfinancial performance measures in alignment with multiple strategic goals. Integrating the activities of different departments is a difficult task for the management of the organization (Axelsson and Axelsson, 2006). A similar interactive process has been followed and reported from Spanish public hospitals (Naranjo-Gil, 2009). In another recent study on implementation of BSC in a community hospital in the US, among others the panel of experts consisted of directors from patient care services and quality management (Lorden et al., 2008a). Aside from administrative managers, involving health care professionals towards the creation of BSC is increasingly being demonstrated to be important for its design and implementation (Probandari et al., 2008; Tsasis and Owen, 2009).

7.3.2 Use of existing data in designing BSC
In the initiative towards BSC design, data which are routinely collected by the hospital were used in study III to develop an integrated core of 20 indicators. Despite few measurement issues related to comparability across various settings, many indicators in study III were similar to the ones shortlisted in HICs (Baker and Pink, 1995). Other studies have also used existing documents to create effective Balanced Scorecards by using similar criteria (Idänpään-Heikkilä et al., 2006; Marshall et al., 2006; McLoughlin et al., 2006). The Afghanistan study (Peters et al., 2007) shortlisted 29 indicators for the BSC including domains of patient and community, staff, capacity for service, service provision, financial system and overall vision. Despite contextual differences similarity can be drawn among indicators shortlisted in study III and those that were identified in Canadian hospitals (Schalm, 2008).

7.4 FOCUS ON THE PROCESS OF BSC IMPLEMENTATION
Study IV is a case study focusing on BSC implementation process during a 12 month observation period. Health care management literature highlights that quality improvement initiatives (unlike medicines) interact with surrounding conditions, depend on these for effectiveness and evolve overtime in response to these conditions (Øvretveit, 2004). Improvement in BSC’s clinical and financial indicators, patient and staff satisfaction is a step
wise process and takes more time to manifest. It is advocated that multiple cycles of BSC execution are required for its complete implementation (Quality Insights of Pennsylvania, 2009). Therefore the focus of study IV was not on assessing these hard core BSC outcomes but rather on trying to understand the contextual conditions and emerging processes as the implementation unfolded. Such emerging processes with emphasis on context have been listed elsewhere as important determinants of outcome (Greenwood et al., 1994; Wihlman et al., 2008).

Study IV used the PGF lens (How, What, Why) for data collection and analysis (Table 7). Pettigrew has reaffirmed the critical role that the study of processes (How) plays in shaping the outcomes of change in general (Pettigrew, 1997). The findings demonstrate that there were two hospital units where the operational nature (responsible mainly for outpatient care) and cultural context allowed managers and clinicians to understand the BSC rationale better than the other two. The study units that lagged behind had responsibility for coordinated inpatient services and were involved in critical diagnostic and operative clinical procedures. The latter did not have designated human resources or a clear agenda for BSC implementation. It has been documented that BSC implementation can proceed only when all members of staff are fully informed regarding the concepts and strategies surrounding BSC (Groene et al., 2009). Interestingly, study unit III decided to start small with only 2/4 quadrants of BSC until information in other quadrants was readily available in the required format. This worked well and the unit could take-off with a delayed start. The conclusion is that implementation process proceeds better when all members of staff are fully informed regarding the concepts and strategies surrounding BSC. Additionally even if a few of the elements of the BSC are adopted it still offers a competitive advantage in the implementation process. Others studies have come up with similar results and recommendations (Groene et al., 2009; Toolpack Consulting, 2001-2009).

It is anticipated that this analysis regarding process of BSC implementation will be useful for those intending to apply BSC in other health care settings.

7.5 CONTEXTUAL BARRIERS IN BSC IMPLEMENTATION

The barriers in BSC implementation identified in the four studies were both external (environmental) barriers and internal (organizational) and correspond with Pettigrew’s context (WHY) dimension.

7.5.1 External Barriers in BSC Implementation

Study I has identified that there are certain necessary prerequisites for successful BSC implementation. Section 1.1.3 describes the larger macro environment of health systems in LICs in relation to these necessary pre-conditions. Moreover the cultural scenario in Pakistan is characterized by bureaucratic procedures, lack of participatory decision-making and accountability (Siddiqi et al., 2009). Use of explicit guidelines and policies do not exist and corruption indices are high (Siddiqi et al., 2005; Green and Collins, 2003). In such a macro-environment fulfilling the required pre-conditions for BSC implementation will remain a
challenge. The influence of this bureaucratically driven system is bound to have a spillover effect and hence the predominance of hierarchical culture in study II should be seen in this larger context. Study IV also has pointed out that lack of comparable PM initiatives at the national level is a barrier in BSC implementation and hinders future benchmarking of progress.

7.5.2 Internal Barriers within the hospital restraining BSC Implementation

The review in study I showed that information technology used to facilitate BSC application is a necessary prerequisite for BSC implementation. Although the study hospital had a very good information system, study III demonstrated that data access, stratification and risk adjustments on currently available data is not always possible even in the best of LIC settings. A recent application of BSC in an Italian hospital has also highlighted that the lack of information systems and the complexity of the research for specific indicators are notable barriers (Verzola et al., 2009).

This project started on a small scale. Even though, the researchers had an “unwritten” institutional mandate to test the BSC, the fact that BSC implementation was not communicated in study IV as part of the hospital’s main strategic plan created periodic resistance from the unit employees (alternative explanations study IV). Caution has previously been cited against ineffective communication strategy during the BSC implementation process (Lorden et al., 2008). It should be pertinent to mention here that the vice president of hospital services at the study hospital had an initial plan to scale-up this BSC to the Board of Trustees (governance level). However her sudden departure (resigned from the job due to personal reasons) was instrumental in toning down the ongoing BSC implementation. Such disruption at the senior management level emerges as a barrier (Table 2) and has also been reported in other studies (Lorden et al., 2008).

Study IV provided an opportunity to customize the scorecard at the level of four clinical units, each with its own strategic priorities and specific service indicators (internal business quadrant of BSC). Other studies have also pointed out that having one generic BSC across the board creates an implementation barrier and in this case subunit scorecards are preferable (Greatbanks and Tapp, 2007). Despite the effort to promote unit autonomy by developing customized scorecards in study IV, ownership for BSC was slow to develop. The reason was that staff were overwhelmed with clinical work and regarded BSC as an added workload with little potential to improve things further. They even pointed out that perhaps BSC should be integrated in their routine work without mentioning that a new PM system was being introduced. BSC should therefore not be perceived as a new centralized top-down management approach which serves as a barrier towards continuing routine activities. Moreover the unit staff needs to be periodically reassured that BSC would not divert their attention from ongoing tasks. Others have also pointed out that BSC does not work if introduced as an independent additional initiative (Table 2) or as a stand-alone project (Mooraj et al., 1999).
I learnt about several complexities of BSC implementation as the process unfolded. Study IV demonstrated that staff wanted adequate professional recognition and incentives for their time and effort. Monetary incentives, award schemes and professional recognition for quality improvement work have been reported to be drivers of employee motivation and energy in other studies (Øvretveit, 2004; Radnor, 2009). Study IV also demonstrates that a lack of physician training in PM, a focus on revenue generation and the belief that collecting and monitoring information for this new monitoring tool was not a “clinician’s job” impaired the pace of BSC implementation. Similar experiences have been noticed in BSC implementation in a Brazilian organization (Gomes and Liddle, 2009). This emphasizes the need for ongoing staff training and orientation in quality of care and performance management. Similar emphasis on recognition of barriers preventing BSC execution has been noted elsewhere too (Tsasis and Owen, 2009).
8 METHODOLOGICAL CONSIDERATIONS

8.1 PAUCITY OF ANALYTICAL STUDIES ON BSC IN HEALTH CARE

It can be seen from the systematic review in study I that BSC experience has mostly been described as case studies in health care. There is uncertainty not only about the effectiveness of BSC but also how to evaluate such effectiveness. In health care the effectiveness of clinical interventions is assessed on the basis of evidence from experimental studies and randomized clinical trials (the ‘gold standard’) as called for in 1972 by Archie Cochrane (Cochrane and Silagy, 1999). This evidence based approach however does not neatly fit current state of maturity in management research (Thor, 2007). This is so because the methodological orientation in health care management seeks to unpack the mechanism of how complex programmes work (or why they fail) in particular contexts and settings (Pawson et al., 2005). Therefore the implementation of evidence based practice in health care management is unlikely simply to follow the established clinical model (Walshe and Rundall, 2001).

Moreover studies reveal that no coordinated effort has been undertaken to conduct and periodically update systematic reviews for healthcare managers and policy makers (Lavis et al., 2005). Little if any attempt has been made to adapt existing reviews for enhancing their local applicability (Lavis et al., 2006). Despite the nature of qualitative data available, study I blended features common to systematic reviews (Pai et al., 2004) with interpretative data analysis and synthesis while reporting experience of BSC use in HICs and its applicability in the LIC context.

8.2 INDICATOR SELECTION AND MEASUREMENT ISSUES

It is to be mentioned that the primary search for indicators was not exhaustive in study III since the starting point was limited by data which were already being collected by this hospital. These indicators were relevant to ongoing management processes in finance, marketing, and human resource departments of the study hospital and to the current hospital quality accreditation plans. However, certain valuable and relevant indicators for the BSC may have been overlooked or were not available. Besides the indicators shortlisted in this study, BSCs in other settings have come up with more sophisticated indicators on survival rates and age, sex and disease- specific mortality and morbidity ratios etc (Robinson et al., 2003; Schalm, 2008; ten Asbroek et al., 2004; Wachtel et al., 1999). The BSC developed in this setting did not have some of these more analytical indicators. Such lack of in-depth outcome data has been listed elsewhere as a BSC implementation challenge (Schalm, 2008).

On the other hand many of the current indicators in the internal business quadrant of the BSC (study III) are driven by the need to collect data for JCI accreditation at this hospital.

Besides the issue of completeness of the data sets, the results from this investigation also reflect limitations of routinely collected data. Certain indicators selected for BSC had relatively lower face validity as assessed by their median ratings. This was mainly due to lack of standardized definitions and measurement techniques, reliable instruments, adequate
sample sizes and response rates etc. Other studies (Baker and Pink, 1995; Zeitlin et al., 2003) have also noted that methodological shortcomings of many indicators have generated skepticism about the data sources, consistency of reporting, derivation of the numbers and their usefulness in offering analogous estimates. However starting with the search of more sophisticated and comprehensive indicators would have required more efforts, time, and resources and was simply not feasible within the scope of this thesis. Due to restricted resources and capacities in LICs it has already been recommended that only a limited set of indicators should be selected (Larson and Mercer, 2004). Relying on existing information system and using standard steps of Delphi technique, this BSC with 20 indicators was derived. As such this is a preliminary step towards defining a more inclusive and comparable set of indicators for use across LIC and HIC hospital settings.

Other studies while selecting regionally comparable indicators, have given the criterion ‘feasibility’ a lesser weightage. This is because limited information about data sets in other countries is available (Mc Loughlin et al., 2006). Since the BSC indicators in study III were derived specifically for the study hospital from already ongoing hospital information system, ‘feasibility’ of acquiring the information was not an issue in this study. An equal weightage was thus given to all criteria while short listing indicators for study III.

8.3 CHALLENGES OF DOING RESEARCH IN YOUR OWN ORGANIZATION

The author of this thesis and the study subjects worked for the same organization. Given the lack of expertise in the field, in some participant observation meetings the researchers were also partial facilitators. This has the potential of introducing an observation bias and affecting team dynamics. It is possible that the first and second study units showed greater enthusiasm because of the presence of the researchers in their meetings (Hawthorne effect). Influence of the Hawthorne effect seems unlikely to have improved results in study IV, as the third and the fourth study units, consistently lagged behind in BSC implementation. Later these observations in study IV were corroborated by interviews to increase the objectivity and neutrality of results. Similar strategies to decrease the effect of observer on study participants have been described by Pettigrew (Pettigrew, 1999).

There is a paucity of literature on the hurdles that employees face while using their own organization as the study site. Some of the challenges that were encountered in study II were the ethical concerns on part of few hospital staff about the anonymity and confidentiality of their views with regards to their unit’s/department’s leadership as the author of this thesis was also working in the same organization. Other studies have pointed out that in relationships within an organization subordinates usually have to encounter certain repercussions from their supervisor if their views about the leader are openly expressed (Coghlan and Brannick, 2001a). Along similar lines the institutional ethical committee also suggested that the identity of the participating clinical units should not be revealed and that an informed written consent be taken prior to the interviews. It has been reported elsewhere that combining action research role with regular organizational assignments creates a role duality and measures need to be taken to reduce the observation bias (Coghlan and Casey 2001b; Sellgren, 2007b).
8.4 LIMITATION OF STUDY QUESTIONNAIRE

QIIS II questionnaire was used in its original language in English in study II, IV. Such questionnaires have limitations. The main limitation is that they rely on perceptions of the individuals (Arvonen, 2002). Another concern is that these questionnaires do not measure real behavior, just the attitude of the employees about their organization and leadership. An advantage of the QIIS-II questionnaire (study II, IV) is that, it has been earlier used on a large scale: in the US for 7,000 individuals, across 67 hospitals (Shortell et al., 1995). It is noteworthy to mention that the measures used in the Shortell 1995 study were already validated through previous work of the same author using independent data derived from a national survey of hospital quality improvement efforts (Barsness et al., 1993).

The study participants were well conversant in English, the questionnaire was pretested, in another clinical department of the study hospital and cultural perceptions verified later through key informant interviews and participant observations. Despite these measures, cautious interpretation of results is important as the questionnaire was not locally validated.

8.5 TRIANGULATION

An example of methodological triangulation where results support each other was found in study IV. The culture typology of the study units as estimated by the QIIS-II questionnaire was supported by cultural values, team dynamics observed during meetings and as described by the key informants. The analysis process involved a comparison of categories found in the interviews and the participant observation meetings. As such no conflicting evidence was found. Using more than one method permits a more realistic understanding of the phenomenon (Berg, 2001). Syntheses of findings from similar multi-method studies have been reported in literature of organizational studies (Lavis et al., 2008). This triangulation brought about a more accurate estimate of the context of BSC implementation in this setting by testing the consistency in the results and the diversity of perspectives.

8.6 CAUSE AND EFFECT RELATIONSHIPS

No conclusions on BSC effectiveness in bringing about a change in the indicators can be drawn from this thesis. In study IV, an experimental or quasi-experimental design was not deemed possible because motivation and management decisions within study units to take up or not take up BSC cannot be assigned randomly nor controlled by the researchers. Moreover it would be difficult to designate some study units as ‘controls’ because in real time situations it is not possible to prevent other hospital units from taking up BSC or any other similar approaches. As pointed out in section 8.1, methodological orientation in health care management research is geared more towards understanding the how, why, what contexts of the implementation process. Therefore for practical purposes and specifically for study IV, case study remains the appropriate methodology.

Assessment of culture typology in study II, IV is based on cross-sectional analysis. This has been ascertained to evaluate cultural type prior to BSC implementation and to understand the
cultural context of the four study units that opted to implement the BSC. No cause-and-effect relationship of culture type with BSC or any other quality improvement initiative is implied.

8.7 SAMPLING

Although sampling is not a consideration in case study methodology, purposive sampling strategy was used and hospital units were selected based on willingness to participate. Moreover the study hospital is a distinctive tertiary care health setting in the LIC context. It has state of the art facilities, international accreditation and ISO certifications. Hence a selection bias cannot be eliminated. On the other hand, this was an institution which fulfilled most of the prerequisites for BSC implementation as identified in study I, and hence offered a unique opportunity to test BSC application in a specific LIC context.

8.8 GENERALIZABILITY

Study II was a cross-sectional study of culture assessment. An overall culture typology of the study department was reported. This department is composed of various subspecialty sections and each section has its own independent operational identity. Moreover, culture of all clinical departments in this hospital was not assessed. Nevertheless, other studies have demonstrated that it is possible to assess different subunit cultures, to identify the common dominant attributes of the subunits, and to aggregate them (Cameron and Quinn, 2005). This combination can provide an approximation of the overall organization’s culture.

In Study III, it was recognized that Pakistan does not have a national hospital database. Therefore the indicators developed for BSC in this hospital cannot be necessarily applicable to other hospital settings in Pakistan. However there are several studies on BSC (described above) which came up with similar set of indicators using a consensus process.

Study IV used some aspects of the PGF theoretical construct which served as a sufficient blueprint for data collection and provided guidance for designing the case study. Later in the analytic phase, PGF was used to identify key strategic processes and barriers in BSC implementation. This mode of generalization is called ‘analytic generalization’ in which a previously developed theory is used as a template with which to compare the empirical results of the case study (Yin, 2003). There is no intention to derive any theory confirming or contesting this framework.

Overall generalizability of this thesis to other private tertiary hospital settings within and outside Pakistan should be carefully interpreted. Studies are based on data available only in this hospital and study II, IV draw on only two large clinical departments (one department with eight subspecialty sections and another where pretesting was done). However, it seems feasible that findings could apply to hospitals similar to the study hospital. At least five other private tertiary hospitals in Pakistan are comparable to the study hospital in terms of diagnostic and curative facilities and information technology infrastructure. Additional research is warranted to further develop the contextual understanding of BSC implementation and broaden the evidence base generated through my thesis.
9 CONCLUSIONS

In this thesis I have set out to contribute to the limited body of empirical evidence about the use and applicability of the Balanced Scorecard in a LIC hospital setting. It has been explored how HICs have used the BSC for improved performance management and how the experience can be transferred to the context of LICs. Importance of organizational culture and leadership in initiating and implementing the BSC has been emphasized. I have pointed out the value of a multidisciplinary panel in selecting indicators for BSC using formal consensus methods. Moreover the case has been argued for using existing hospital data to select indicators for the BSC, despite the inherent limitations of data quality management in LICs. My findings identify a number of challenges in BSC implementation, from which some overall conclusions and policy implications emerge.

The key conclusions from this thesis are:

- Direct evidence describing BSC use in a LIC health care setting or why such an implementation is hindered or how it could be facilitated has not been demonstrated (I).
- Characteristics of all culture types were observed in this hospital with predominance of hierarchical/bureaucratic typology (II).
- A participatory and group culture promotes positive perceptions about leadership and supports BSC implementation efforts (II, IV).
- Delphi process is useful in selecting indicators for BSC with consensus. Measurement issues related to indicators pose a methodological challenge (III).
- BSC may have the potential to work better in clinical units with more focused outpatient care rather than in specialties with greater inpatient care (IV).
- Committed leadership, quality information systems, participatory culture and multidisciplinary team approaches can enhance feasibility of BSC implementation (I, IV).
- Hierarchical culture, lack of clear institutional mandate, inappropriate leadership support, absence of a recognition and reward system as well as incomplete sensitization to BSC benefits emerged as key contextual barriers in BSC implementation (IV).
10 RECOMMENDATIONS AND POLICY IMPLICATIONS

The involvement of a tertiary care hospital in a LIC setting to implement the BSC was a unique experience with a "catalytic validity". The latter implies that the story does not end here, but there is potential to continue the process of change based on self-understanding and self-determination of research participants who have been empowered in the process (Stiles, 1999).

Banking on the results of these four studies, the next step is therefore an assessment for compatibility with current institutional dynamics and the existing hospital information management system. This would determine whether this hospital is ready to fully implement and upscale the BSC system. Hospital’s strategic plan could emphasize a common roadmap for clinicians and managers. A clear operational plan integrating support for BSC in policies, resources (human and financial) and reward and recognition systems needs to emerge. Appropriate risk analysis is required. Leadership has to ensure a clear communication strategy throughout the organization, with role clarification and consensus about the purpose and benefits of BSC before its large-scale implementation. Unless these barriers are overcome BSC implementation at best would remain a challenge. Other studies have also pointed out the need to foster designated human resources, not rushing the BSC introduction, thereby creating a receptive organizational culture and integrating the scorecard with existing management processes (Schalm, 2008).

Based on observations from my studies hospital administrators and quality care managers could consider promoting an enabling environment with appreciation and credibility for team approaches. It has been shown that performance measurement tools (leading towards improved efficiency) are not ‘magic bullets’ which will always hit their target, but need to be adapted to suit context and implementation (Pawson et al., 2005). A good starting point (for the study hospital) therefore could be to take a phased approach and start with those clinical units that provide time-bound outpatient services. These include departments of Family Medicine, Emergency Medicine, Radiology, Anesthesia and Operation Theatre Management etc. Recent studies in Italy concluded that introducing BSC to improve management of day-care surgery, and gastroenterology endoscopy units has the potential to optimize services (Onetti, 2008; Verzola et al., 2009). BSC has also been used to improve nursing care in an intensive care unit in Korea (Choi et al., 2008). The successful application of BSC in an emergency department in Taiwan is another example of the type of specialties that have a greater potential to uptake BSC (Huang et al., 2004).

Integration of BSC is required at various levels: frontline clinical specialty, medical directorate and board. Lessons learnt will drive future aspects of sustainability and scalability of BSC in this hospital and serve for benchmarking performance with its peer hospitals in the country and region.
11 PERSONAL EPILOGUE

Besides the specific focus on GHIs, a sustained political commitment from Ministry of Health Pakistan to execute a regulatory environment with periodic quality audits, certifications and performance charting for all hospitals is a much needed initiative. Other studies have also pointed out this lack of regulatory mechanisms and absence of accreditation while also highlighting the fragmented health services delivery in Pakistan (Nishtar, 2006 b). Raising awareness about the multiple gains of using PM tools to strengthen health systems (health status, patient and employee satisfaction, economic efficiency and overall accountability) is, however, the essential first step. WHO has developed a performance assessment framework for hospitals and its selected universal indicators could serve as a reference point for comparing hospital performance across both high and low-income countries (Veillard et al., 2005).

The research reported in this thesis attempts to make on a modest contribution to developments in health care management by demonstrating how a PM tool such as the BSC is introduced and implemented in a LIC hospital setting. It emphasizes that BSC is an evolutionary process that takes time and depends on the contextual needs, ambitions and circumstances of the implementing organization.

There is an opportunity to establish the utility of BSC, employing contextual cyclical studies on performance management and dynamics. Such studies could take account of managerial and medical ambitions, intentions and leadership styles in facilitating change. As proved elsewhere the team progresses through each cycle, testing and learning more about what works, how it works and why it works (Langley et al., 1996). Lessons learnt can then be quoted as best practices in BSC implementation for both high and low-income settings.

There is tide in the affairs of men,
Which taken at the flood, leads on to fortune;
Omitted, all the voyage of their life
Is bound in shallows and in miseries.
On such a full sea are we now afloat;
And we must take the current when it serves,
Or lose our ventures.

William Shakespeare—Julius Caesar
12 ACKNOWLEDGEMENTS

First and foremost, I would like to thank my supervisor Goran Tomson for his guidance, conceptual critique, encouragement and support throughout the period of my studies. I learnt from him that “sky is the limit”. I am grateful to my co-supervisor Mats Brommels for all the compassion and kindness offered. Mats was always there to bring in the ‘management paradigm’ to this thesis and help me to move forward with my work.

From AKU Karachi, I thank the senior Aga Khan University (AKU) leadership – President Firoz Rasul, Dr. Mohammad Khurshid, ex-dean of the Medical College; both ex and current V.President health and operational services Ms. Dallas Ariotti and Mr. Allaudin Merali respectively for their understanding of this work; and Director General and CEO Nadeem Khan – for encouraging me to proceed with the work in 2006. I thank Drs. Wasim Jafri (ex-chair Dept of Medicine and current Associate Dean Continuing Professional Education) and Dr. Farhat Abbas (ex-Chief Operating Officer AKUH and current dean Medical College) for believing in me and facilitating the work at AKU/AKUH. I thank Shafaq Ambreen & Shalina Karim for their untiring secretarial assistance. Shalina you were always available to help despite your multiple tasks. Thankyou Dr. Mairaj Shah, Manager of Clinical Affairs and CME and Dr. Wasif Shahzad, Manager Dept of Medicine for assisting in initial meetings in 2006. My sincere acknowledgements are extended to all the AKU staff and faculty, who were participants in my studies and whose name cannot be revealed due to reasons of anonymity. From Dept of Community Health Sciences AKU, I would also like to thank Mr. Nasiruddin and my faculty colleagues Drs. Masood, Rehana, Imtiaz, Sarah and Babar for keeping the ball rolling in my absence. Thankyou Drs. Fozia Qureshi, Rukhsana Zuberi, Jack Bryant and Franklin White for your mentorship at various stages of my career and continued interest in my work.

Special gratitude to Pia Maria Jonsson (my pre-dissertation mock opponent) for supporting me by her remark that she found this work ”very interesting”. It was her subtle style of encouragement and a very positive critique that set the tone of my work in the last few weeks. Thankyou Rolf Wahlstrom at IHCAR Karolinska Institutet (KI) Sweden for providing detailed comments on some drafts of studies and for being there in my pre-dissertation seminar at IHCAR. I am impressed by Professor’s Vinod Diwan’s calm personality and for always giving a simple solution to many logistic problems. I would like to thank Bo Badr Saleem Lindblad, professor emeritus of international child health, Department of Public Health Sciences, Division of International Health (IHCAR), Karolinska Institutet Medical University, Stockholm, Sweden, and visiting professor, AKU, Karachi, Pakistan, for introducing me to KI and for his overall support and direction. Thanks also go to Aspen Publishers for allowing me to reproduce and adapt material for study I; Hamida Kassamali-Bhimani, ex project manager, Hospital Report Research Collaborative, University of Toronto, for providing access to articles on BSC at the launching phase of this project in 2005-06; Thomas Mellin and Bo Planstedt at IHCAR, for connecting me to various information technology resources throughout the four years journey. Gratitude is extended to Robin R.
Gillies, Ph.D. Director, Research Projects University of California, Berkeley Health Policy and Management School of Public Health for granting permission to use the validated questionnaire. Thankyou Asli Kulani from IHCAR for sharing differences across cultures during my 2005, 12 month stay in Sweden and Johan Thor at MMC for referring me to take the case study methodology course at Kungliga Tekniska högskolan (KTH). I would also like to thank my ex and current fellow PhD students and colleagues at IHCAR and MMC; Mohsin, Saima, Tazeen, Hamideh, Anastasia, Nina, Romano, Vibeke, Moa, Jesper, Jaran for settling me down with various logistic crisis during my several short and intensive visits in the last two years. I express my gratitude to Professor Staffan Bergstrom for arranging to give me the subject specific exam. I owe special gratitude to IHCAR administrative staff for their kind support. Thank you Kersti and Gun-Britt. A big thanks to Anna –Berit and Marianne Velandia for giving me a home away from home.

Now I write few special lines about my research intern Ms. Sabrina Lalji who is also a co author in manuscript IV. She was my main support in the last 12 months in several ways. It is through her commitment and untiring efforts that this work was brought to a fruitful completion. She assisted me both during her internship at AKU and long distance from Canada. She worked with me day and night…without borders…..Bravo Sabrina!!!!!

I wish to acknowledge my grant sources: Swedish South Asian Network (SASNET), Swedish Institute (Si), WHO EMRO, and AKU Faculty Development Award (FDA) and AKU University Research Council (URC).

The acknowledgements are incomplete without thanking my wonderful family; I lost my father recently and it is too painful to talk about him. Would it suffice to say that ‘daddy you live in me and I will try to follow all your principles in life’. Dr. Arjumand Rabbani my mother, and husband Dr. Shahab Abid continued to stand by me in thick and thin, during health and during my illness and encouraged me to make this happen. Thankyou Shahab for the companionship and for bearing with my temperament. Mom (ami) you are the driving force behind my success…my backbone. It is through your training that I am what I am. This degree goes to you!! My beautiful teenage sons, Fahad and Adeel, thankyou for patiently waiting at home while mama was absent (physically or mentally). Fahad, with your quiet smile and patience you have helped me cope through this struggle and Adeel your remarks about the Balanced Scorecard (“some weird tool”) have kept me amused. My dear sons, you two have been the joy in my life. I hope someday you will take the legacy of your grandfather forward. I would like to express my gratitude to Najma Abid my mother in law, father in law Abid Siddiqi and sister in law Farah Abid for praying for me and giving me the moral support. I also thank my brothers and sister in- laws Ahson, Zonaaria , Faisal and Maria….they were there to take care of my children and help in all possible ways .

And finally …. thankyou God (Almighty Allah) for giving me a second life and the opportunity to fulfill my dreams!!
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### 14. APPENDICES

#### 14.1 APPENDIX 1: DATA EXTRACTION FORM FOR SYSTEMATIC REVIEW (I)

**SYSTEMATIC REVIEW: DATA EXTRACTION FORM**

**Balanced Scorecard in Health care**

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<table>
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<th>Study Design</th>
<th>Study outcomes</th>
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<tbody>
<tr>
<td>1. Yes</td>
<td></td>
<td>1. General discussion of BSC principles</td>
<td>1. Well described</td>
</tr>
<tr>
<td>2. No</td>
<td>2. Case study</td>
<td>2. Partially described</td>
<td>2. Partially described</td>
</tr>
<tr>
<td></td>
<td>3. Quasi experimental design</td>
<td>3. Not described/evaluated</td>
<td>3. Not described/evaluated</td>
</tr>
<tr>
<td></td>
<td>4. Case Control study</td>
<td>4. Other</td>
<td>4. Not applicable</td>
</tr>
<tr>
<td></td>
<td>5. Cohort study</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. RCT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Other</td>
<td></td>
<td></td>
</tr>
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</table>

<table>
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<th>Does this study involve BSC application</th>
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<th>Study outcomes</th>
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</tr>
<tr>
<td>2. No</td>
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</tr>
<tr>
<td>3. Other PM initiative related to BSC</td>
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**Briefly describe the study results with implications:**

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<tbody>
<tr>
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</tr>
<tr>
<td>2. No</td>
<td></td>
</tr>
</tbody>
</table>

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QUALITY IMPROVEMENT IMPLEMENTATION SURVEY II

CONDUCTED BY:

Health Policy and Management,
School of Public Health,
University of California, Berkeley

YOUR RESPONSES TO THIS SURVEY ARE CONFIDENTIAL

Individual respondents will not be identified by name in any analyses or reports. Responses will be aggregated and reported as summary statistics only. The number printed on the survey is for purposes of questionnaire follow-up only.

FOR QUESTIONS PERTAINING TO THIS SURVEY, CONTACT:
ROBIN GILLIES, PROJECT DIRECTOR, (510) 643-8063.

PLEASE RETURN THE QUESTIONNAIRE IN THE POSTAGE-PAID ENVELOPE WITHIN ONE WEEK OF RECEIVING IT.

YOUR ASSISTANCE IS VERY MUCH APPRECIATED.
PART I
**HOSPITAL CULTURE**

**Instructions:** These questions relate to the type of hospital that your institution is most like. Each of these items contains four descriptions of hospitals. Please distribute 100 points among the four descriptions depending on how similar the description is to your hospital. None of the descriptions is any better than the others; they are just different. For each question, please use all 100 points.

For example: In question 1, if Hospital A seems very similar to mine, B seems somewhat similar, and C and D do not seem similar at all, I might give 70 points to A and the remaining 30 points to B.

**Hospital Character (Please distribute 100 points)**

1. _____ Hospital A is a very personal place. It is a lot like an extended family. People seem to share a lot of themselves.

2. _____ Hospital B is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.

3. _____ Hospital C is a very formalized and structured place. Bureaucratic procedures generally govern what people do.

4. _____ Hospital D is very production oriented. A major concern is with getting the job done. People aren't very personally involved.

**Hospital's Managers (Please distribute 100 points)**

5. _____ Managers in Hospital A are warm and caring. They seek to develop employees' full potential and act as their mentors or guides.

6. _____ Managers in Hospital B are risk-takers. They encourage employees to take risks and be innovative.

7. _____ Managers in Hospital C are rule-enforcers. They expect employees to follow established rules, policies, and procedures.

8. _____ Managers in Hospital D are coordinators and coaches. They help employees meet the hospital's goals and objectives.
**Hospital Cohesion (Please distribute 100 points)**

9. _____ The glue that holds Hospital A together is loyalty and tradition. Commitment to this hospital runs high.

10. _____ The glue that holds Hospital B together is commitment to innovation and development. There is an emphasis on being first.

11. _____ The glue that holds Hospital C together is formal rules and policies. Maintaining a smooth running operation is important here.

12. _____ The glue that holds Hospital D together is the emphasis on tasks and goal accomplishment. A production orientation is commonly shared.

**Hospital Emphases (Please distribute 100 points)**

13. _____ Hospital A emphasizes human resources. High cohesion and morale in the organization are important.

14. _____ Hospital B emphasizes growth and acquiring new resources. Readiness to meet new challenges is important.

15. _____ Hospital C emphasizes permanence and stability. Efficient, smooth operations are important.

16. _____ Hospital D emphasizes competitive actions and achievement. Measurable goals are important.

**Hospital Rewards (Please distribute 100 points)**

17. _____ Hospital A distributes its rewards fairly equally among its members. It's important that everyone from top to bottom be treated as equally as possible.

18. _____ Hospital B distributes its rewards based on individual initiative. Those with innovative ideas and actions are most rewarded.

19. _____ Hospital C distributes rewards based on rank. The higher you are, the more you get.

20. _____ Hospital D distributes rewards based on the achievement of objectives. Individuals who provide leadership and contribute to attaining the hospital's goals are rewarded.
PART II
LEADERSHIP

21. The senior executives provide highly visible leadership in maintaining an environment that supports quality improvement. 1 2 3 4 5 9

22. The CEO/Administrator is a primary driving force behind quality improvement efforts. 1 2 3 4 5 9

23. The senior executives allocate adequate organizational resources (e.g., finances, people, time, and equipment) to improving quality. 1 2 3 4 5 9

24. The senior executives consistently participate in activities to improve the quality of care and services. 1 2 3 4 5 9

25. The senior executives have articulated a clear vision for improving the quality of care and services. 1 2 3 4 5 9

26. The senior executives have demonstrated an ability to manage the changes (e.g., organizational, technological) needed to improve the quality of care and services. 1 2 3 4 5 9

27. The senior executives act on suggestions to improve the quality of care and services. 1 2 3 4 5 9

28. The physician leadership is personally involved in quality improvement efforts. 1 2 3 4 5 9

29. The senior executives have a thorough understanding of how to improve the quality of care and services. 1 2 3 4 5 9

30. The senior executives generate confidence that efforts to improve quality will succeed. 1 2 3 4 5 9

31. Senior executives seek information on needs and suggestions for quality improvement directly from external customers (e.g., patients, families, and payers). 1 2 3 4 5 9

INFORMATION AND ANALYSIS

32. The hospital collects a wide range of data and information about the quality of care and services. 1 2 3 4 5 9

33. The hospital uses a wide range of data and information about the quality of care and services to make improvements. 1 2 3 4 5 9
34. The hospital continually tries to improve how it uses data and information on the quality of care and services.

35. The hospital continually tries to improve the accuracy and relevance of its data on the quality of care and services provided.

36. The hospital continually tries to improve the timeliness of its data on the quality of care and services provided.

37. Hospital employees are actively involved in determining what data are collected for the purpose of improving the quality of care and services.

38. The hospital compares its data to data on the quality of care and services at other hospitals.

**STRATEGIC QUALITY PLANNING**

39. Hospital employees are given adequate time to plan for and test improvements.

40. Each department and work group within this hospital maintains specific goals to improve quality.

41. The hospital's quality improvement goals are known throughout the organization.

42. Hospital employees are involved in developing plans for improving quality.

43. Middle managers (e.g., department heads, program directors, and first line supervisors) are playing a key role in setting priorities for quality improvement.

44. External customers are playing a key role in setting priorities for quality improvement.

45. Non-managerial employees are playing a key role in setting priorities for quality improvement.

**HUMAN RESOURCE UTILIZATION**

46. Hospital employees are given education and training in how to identify and act on quality improvement opportunities.
47. Hospital employees are given education and training in statistical and other quantitative methods that support quality improvement. 1 2 3 4 5 9

48. Hospital employees are given the needed education and training to improve job skills and performance. 1 2 3 4 5 9

49. Hospital employees are rewarded and recognized (e.g., financially and/or otherwise) for improving quality. 1 2 3 4 5 9

50. Inter-departmental cooperation to improve the quality of services is supported and encouraged. 1 2 3 4 5 9

51. Hospital employees have the authority to correct problems in their area when quality standards are not being met. 1 2 3 4 5 9

52. Hospital employees are supported when they take necessary risks to improve quality. 1 2 3 4 5 9

53. The hospital has an effective system for employees to make suggestions to management on how to improve quality. 1 2 3 4 5 9

QUALITY MANAGEMENT

54. The hospital regularly checks equipment and supplies to make sure they meet quality requirements. 1 2 3 4 5 9

55. The quality assurance staff effectively coordinate their efforts with others to improve the quality of care and services the hospital provides. 1 2 3 4 5 9

56. Data from suppliers are used when developing the hospital's plan to improve quality. 1 2 3 4 5 9

57. The hospital has effective policies to support improving the quality of care and services. 1 2 3 4 5 9

58. The hospital works closely with suppliers to improve the quality of their products and services. 1 2 3 4 5 9

59. The hospital tries to design quality into new services as they are being developed. 1 2 3 4 5 9

60. The services which the hospital provides are thoroughly tested for quality before they are implemented. 1 2 3 4 5 9
61. The hospital views quality assurance as a continuing search for ways to improve.

62. The hospital encourages employees to keep records of quality measurements.

**QUALITY RESULTS**

63. The hospital has done a good job documenting that changes made in providing services have produced the intended results.

64. The hospital has done a good job of simplifying how care and services are provided.

65. Over the past few years, the hospital has shown steady, measurable improvements in the quality of care provided to medical, surgical and obstetric patients.

66. Over the past few years, the hospital has shown steady, measurable improvements in the quality of services provided by clinical support departments such as laboratory, pharmacy, and radiology.

67. Over the past few years, the hospital has shown steady, measurable improvements in the quality of services provided by support areas such as accounting, billing, human resources, and marketing.

68. Over the past few years, the hospital has shown steady, measurable improvements in patient satisfaction results.

69. Over the past few years, the hospital has shown steady, measurable cost reduction while maintaining or improving quality.
CUSTOMER SATISFACTION

70. The hospital does a good job of assessing current patient needs and expectations. 1 2 3 4 5 9

71. The hospital does a good job of assessing future patient needs and expectations. 1 2 3 4 5 9

72. Hospital employees promptly resolve patient complaints. 1 2 3 4 5 9

73. Patients' complaints are studied to identify patterns and prevent the same problems from recurring. 1 2 3 4 5 9

74. The hospital uses data from patients to improve services. 1 2 3 4 5 9

75. Data on patient satisfaction are widely communicated to hospital staff. 1 2 3 4 5 9

76. The hospital does a good job of assessing physician satisfaction with hospital services. 1 2 3 4 5 9

77. The hospital uses data on customer expectations and/or satisfaction when designing new services. 1 2 3 4 5 9

78. The hospital does a good job of assessing employee satisfaction with services provided by other employees and departments. 1 2 3 4 5 9
Please provide the following information about yourself by circling one response for each question.

79. How long have you worked for or been associated with this hospital? (Circle one number)

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<tr>
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<td>4</td>
</tr>
<tr>
<td>Ten or more years</td>
<td>5</td>
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</table>

80. Which of the following areas are you primarily associated with? (Circle one number)

<table>
<thead>
<tr>
<th>Area</th>
<th>Circle</th>
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<tbody>
<tr>
<td>CCU or ICU nurse</td>
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</tr>
<tr>
<td>Hospital Administration</td>
<td>2</td>
</tr>
<tr>
<td>Medical staff member</td>
<td>3</td>
</tr>
<tr>
<td>Medical/surgical floor nurse</td>
<td>4</td>
</tr>
<tr>
<td>Operating Room nurse</td>
<td>5</td>
</tr>
<tr>
<td>Other ________________________</td>
<td>6</td>
</tr>
</tbody>
</table>

(Specify)

81. Are you a member of the hospital-wide quality assurance or quality improvement steering council (or equivalent body)?

<table>
<thead>
<tr>
<th>Membership</th>
<th>Circle</th>
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<tr>
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<tr>
<td>No</td>
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THANK YOU FOR YOUR TIME AND EFFORT. PLEASE RETURN THE COMPLETED SURVEY IN THE ENVELOPE PROVIDED TO:

ROBIN GILLIES
PROJECT DIRECTOR
HPM--WARREN HALL
UNIVERSITY OF CALIFORNIA, BERKELEY
BERKELEY, CA  94720-7360

TELEPHONE: (510) 643-8063  FAX: (510) 643-8613
14.3 APPENDIX 3: KEY INFORMANT GUIDE (IV)

Key informant interview guide

What was the main incentive to start/continue BSC implementation in your unit?

Has the implementation of BSC been guided by any performance measurement initiative at national level?

Has the implementation of BSC been guided by any performance measurement initiative at the hospital/organizational level?

Have you customized the BSC to your unit. If so how?

How was the BSC different from what performance measurement systems already existed in your clinical unit?

Exactly which activities were planned to implement the BSC?

Did your unit receive proper training in aspects of BSC implementation?

Were appropriate resources allocated for BSC implementation?

Has the implementation of BSC affected the culture in your unit? If so how can you describe the shift?

What were the effects of introducing BSC so far for your unit’s staff?

Was your unit’s leadership conducive to BSC implementation? In what ways?

What helped and hindered the BSC implementation activities in your unit and what could have been done differently?

Did you have problems in accessing information to design and monitor BSC indicators?

Has BSC become part of your unit’s performance measurement system?

Interview guide developed based on Pettigrew and Whip’s conceptual framework (WHAT, WHY, HOW)