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AN INTEGRATED PERFORMANCE MEASUREMENT SYSTEM OF HEALTH CARE SERVICES: AN EMPIRICAL STUDY OF PUBLIC AND PRIVATE HOSPITALS IN MALAYSIA.

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بسم الله الرحمن الرحيم

In the Name of Allah, the Beneficent, the Merciful

First and foremost, thanks to Allah the Almighty who gave me the capacity and will power to finish what has been a long journey for a novice researcher like me. This work would not have been completed without the help of many individuals whose supports has meant a great deal to me.

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Finally, my thanks go to my beloved wife, Shahidah Haji Jaffar, and my adorable sons, Muhammad Shahir (8 years), Muhammad Syakir (6 years), Muhammad Syamil (3 years) and Muhammad Syahmi (9 months). I am especially grateful to my wife, who has sacrificed much, not only in her career as a teacher but also as a loving and patient mother to my children. My young sons have coped well with the absence of their father and have given me the inspiration to complete my doctorate. This thesis I dedicate to my mother, wife and sons. Without them, it would have been impossible for me to be what I am today. I share the joy and honour with them.

The purpose of this study is to explore performance measurement systems in the healthcare services in Malaysia. This study postulates a framework based on an analysis of the existing literature in the field and on the empirical evidence collected during fieldwork. This framework provides a useful perspective for studying performance measurement in developing countries such as Malaysia. Moreover, identification of gaps in the field enables both academics as well as practitioners to improve the existing systems, thereby creating more robust and better surveillance in the healthcare industry.

The findings show that in order for systems to operate efficiently, three major components must work together, namely strategy formulation and deployment, internal control systems, and managing processes. The empirical framework developed in the study represents an amalgamation of approaches used in organisations. One of the findings is that top management commitments, people involvement, and structure to accommodate change process are the catalyst for measurement systems to work. Further analysis reveals (survey) that 80% of users are not satisfied with their measurement system. This means that there is a need for further research in the future. Performance measurement is in its embryonic stage in Malaysia as the survey reveals domains accomplishment of less than 50%. The healthcare industry is inevitably growing and the Malaysian government needs to address the importance of measuring performance in the long run. Learning from another country's experience is the best way forward.

The thesis also provides a context in which performance measurement works. There are two contexts applied: healthcare industries and Malaysia. Both contextual elements are important; healthcare has special attributes that make it different from other industries, while Malaysia has unique properties that provide a fresh look at healthcare. The key to successful performance measurement is to ensure congruence in all elements of the systems: context (Malaysia and healthcare) and content (organisations where systems exist). Then integration can be accomplished.

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

Globalisation has created an era of performance improvement in organisations. This phenomenon has impacted business practices to such an extent that performance measurement is needed not just to be competitive or prosper but even to survive: it is a prerequisite for today's organisation in the modern business world. Consequently, organisations are searching for tools and techniques to manage effectively and efficiently.

Though there have always been ways to measure performance, it has now evolved into a holistic approach. Traditionally, financial indicators were the main criteria. More recently Kaplan (1992) insisted that a set of measures need to be balanced and well integrated between financial and non-financial measures. Arising out of this, the integrated performance measurement system (PMS) was created to enhance business performance. The disadvantage of financial measures will be highlighted in later chapters. Figure 1.1 demonstrates the framework of performance measurement systems in the context of the environment.

In implementing PMS, it is necessary to refute the misconception that it is a "pile of paperwork to be completed and reams of information that no one ever evaluates" (Reiner, 1996). Furthermore, Waggonner et al (1999) point out that institutional obstacles such as unfamiliarity of performance measurement use among managers, being unreceptive to using quantitative data as a basis for decision

making, and 'innovation saturation' whereby performance measurement is seen as just another flavour of the month, are common criticisms of performance measurements. The paradox of organisational performance has been noted by numerous authors, among them Quinn et al (1996), Cameron (1986), Meyer and Gupta (1994). Quinn et al (1996) states the nature of the paradox

"We want our organisation to be adaptable and flexible, but we also want them to be stable and controlled. We want growth, resource acquisition, and external support, but we also want tight information management and formal communication."

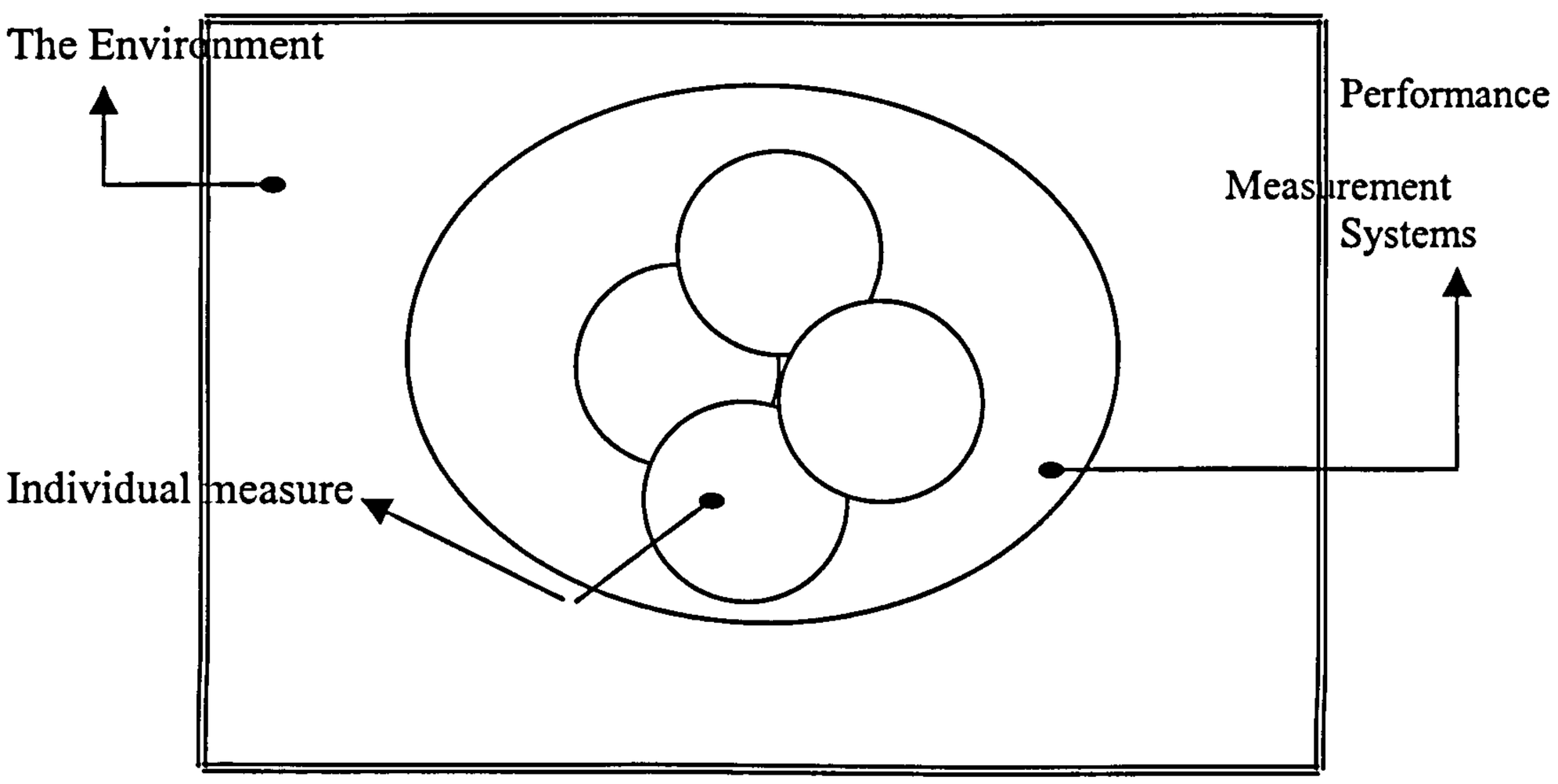

FIGURE 1.1 SCHEMATIC VIEW OF PERFORMANCE MEASUREMENT SYSTEMS

Figure 1.1 illustrates the individual measures interaction in an environment to provide the context for performance measurement systems. This interaction will be explained further in the literature (Chapter Two).

1.2 BACKGROUND OF THE STUDY

Why do organisations measure performance in the first place? Kaydos (1999), a renowned management consultant, pointed out that "without performance measures, managers can't really understand how their business process works, the problems within the organisation and whether their attempts to improve performance worked as planned." Futhermore, he stresses that, "knowing the score (Baldridge award) is important, but what really matters in business is improving the score (Performance measurement)."

The matter gets complicated when applied to healthcare, as the domain of health is as large and complex as the entire scope of human activities. Levey and Loomba (1984) define health as, "intimately related to the idea of quality of life not only of individuals, but also of organisations, societies and nations." The issues of health, healthcare and the healthcare system and its various components (eg patients, administrator, hospitals, managers and many others) are complex and multidimensional. They advocate that, "they are complex because the very definition and measurement of health involves a formidable challenge, although considerable progress in these areas has been made during the last decades." These multidimensional components can be seen from figure 1.3, the health care wheel, and figure 1.4, hospital-administration pressure points.

This study focuses on performance measurement systems in healthcare settings in Malaysian hospitals. The researcher is looking into both public and private practices of health care, in order to better understand the determinants of a successful performance measurement system. These practices look into the Malaysian context as it promotes learning between sectors and thus helps serve the

Malaysian general public. Many researchers in the field of healthcare have not fully investigated the concept of performance measurement (though these are well developed in other fields). Moreover, taking into account the complexities of measuring performance in healthcare sets new challenges for researchers in general.

1.2.1 Definition of Performance Measurement

According to Neely et al (1995), " performance measurement is a topic which is often discussed but rarely defined." Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action, while Fry (1995) describes measurement as a means of tracking performance. Nanni et al (1990) promote the idea of measures as a thermostat to explain the feedback loop of a control systems. Kaydos (1999) aptly describes an organisation without PMS as an aeroplane with a missing instrument. Fornell (1992) refers to PMS as a barometer, while Hanlon (2000) liken it to a dashboard in an automobile. These traditional views of performance measures are an integral part of planning and control cycles (Neely et al 1997). Sink (1991) points out that performance measurement is a "mystery...complex, frustrating, difficult, challenging, important, abused and misused." One of the obstacles in studying the field of performance measurement is the broad definition of the terminology. A review of literature reveals that many terms are often used to represent several different concepts of PMS. The terms that need to be defined specifically in this thesis are concepts of performance measurement, performance measures and performance measurement system. Neely et al (1999) stated that the field of performance measurement is used by diverse

groups of people from a variety of disciplines. Performance measurements are derived from accounting (Bromwich and Bhimani 1989; Chandler 1977; Cooper 1987, Kaplan and Norton 1996 and many other writers), business strategy (Chakravarthy 1986; Simons 1995 and others), production and operations management (Dixon et al 1990; Fitzgerald et al 1991; Neely et al 1996 and others), marketing (Fornell 1992) and organisational behaviour (Meyer and Gupta 1994 and others). The research stance adopted in these disciplines determines the choice of definition.

1.2.2 Definition of Performance Measures

Performance measures can be defined as a metric used to quantify the efficiency and/or effectiveness of an action (Neely 1994). Some authors call them performance indicators, performance criteria, key results measures etc. Performance measures are the numerical indicators of performance within the organisations. Euske (1984) defines performance measures as "characteristics of output that are identified for purposes of evaluation", while Hronec (1993) defines it as a 'vital sign' for organisations that "quantifies how well the activities within a process or the outputs of a process, achieve a specified goal." While Geanuracos and Mieklejohn (1993) advocate performance measures as "a record of activities", which supports Fry's (1995) definition of performance measurements, ie tracking performance. Turney (1992) extends the definition further, as "to communicate how an activity is meeting the needs of internal and external customers." This definition incorporates customer satisfaction as suggested by Fornell (1992) and Anderson et al (1994).

Globerson (1985) defines performance measures as "relative elements used to evaluate macro and micro, long-term and short-term, flow and static, functional and overall performance." These definitions are further refined by Crawford (1988) and Lockamy (1991). Juran (1992) defines a measure as "amount of some quality feature that permits evaluation of that feature in numbers." Hax and Maijuf (1991) agree with Juran notions of measurement and extend it into organisational levels, in which he defines it as "quantitative indicators of the performance of the firm defined at different hierarchical levels: corporate, business and functional."

1.2.3 Definitions of Performance Measurement System

This study focuses on the performance measurement system of an organisation in which it requires performance measurement to be put into the context of the environment in which it operates. A performance measurement system can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions (Neely, 1994). Juran (1992) refers to the system as a 'sensor' to detect any deficiencies or excellence in performance. McNair et al (1989) stress that the purpose of performance measurement is crucial in integrating activities across functions and levels of the organisation. This supports Hronec 's (1993) definition: "a tool for balancing multiple measures (cost, quality and time) across multiple levels (organisations, processes and people)."

Globerson (1985) defines performance measurement system as "a systematic way of evaluating the inputs, outputs, transformation, and productivity in a manufacturing and non-manufacturing operation." Globerson's definition follows

production and operations management views of an inputs-transformation-output model. This view is aligned to systems thinking methodology.

Kaplan (1991) is concerned with timely feedback, in which he states that an effective performance measurement system "should provide timely, accurate feedback on the efficiency and effectiveness of operations." Lockamy (1993) agrees with this definition and extend it further as "a means of communicating objectives and achievements throughout the organisation and for ensuring that the firm is using its resources in the most effective manner."

1.3 WHY MEASURING PERFORMANCE IS IMPORTANT

Performance measurement has long been identified as one of the determinants of a successful organisation. As Neely (1999) pointed out, businesses are now competing in an environment where value, not price, is the key driver. Therefore, measurement forms an integral part of any management control system (Anthony 1975). Klein (1981) states that there is "cost explosion" in the health industry, and thus measurement plays a role to alert the tension on pressure points within the organisation (refer to figure 1.4). Churchman (1959) points out that measurement "attained social prestige" since "it is better to measure than not to measure"; an example is the ISO accreditation. Srikanth (1992) suggests that performance measures are a "prerequisite to improving productivity, competitiveness , and profitability." Lessner (1989) supports Srikanth's view and further claims a "well-designed and properly applied performance measurement system is the strongest management tool available for controlling operations and fostering

change." The purpose of performance measurement has been discussed along the following topics as suggested by Bedrup (1995):

- **Decision support**

  Ideally measurement should indicate where to act, perhaps how to act, and hopefully monitor the effect of the action. Decision should be based on knowledge and measurement plays an important role in providing information.

- **Monitor effects of strategic plan**

  Implementation of strategic plans has to be monitored to make necessary corrections to ensure achievement of long-term goals. Indicators have to be chosen to monitor consequences and achievements.

- **Performance evaluation**

  Evaluation is required for a number of reasons, such as tracking improvement potentials, setting new yardsticks, satisfying requirements from stakeholders, distributing incentives etc.

- **Diagnosis**

  An organisation needs indicators with a diagnostic purpose. If business achievements are decreasing, the performance measurement system should be able to give some warnings in advance and provide input to a search for reasons. However, it is difficult to isolate the cause/effect relationship.

- **Management of a continuous improvement process**

  A continuous improvement process often provides stepwise savings such as released capacity. Increased value for the outcome measurement is important to justify further investments and efforts in the process, to manage the process and ensure consistency with strategy and to transform improvements into business achievements.

- **Motivation**

  Measuring progress is necessary to justify further effort in the improvement process. Resistance to change is considerable in most organisations and lack of progress is enough to kill a project or a process.

- **Comparison**

  Evaluation of performance and performance planning depends on references to identify performance gaps. Comparative benchmarking is possible to identify these gaps.

- **Record development**

  Documentation of development could be demanded by stakeholders such as customers, authorities, alliance partners, etc; or used actively as a marketing tool measurement to monitor and record supplier performance and to give input to their improvement processes which could result in productivity improvement.

1.4 DESCRIPTIONS OF PROBLEM STATEMENT

Performance measurement has been identified as a key agent in any attempts to manage organisational change (Brignall 1993). It is used as a monitoring and control mechanism to keep organisations on track. There are many tools and techniques available to align organisational performance. Conventional accounting systems provide such measures. Until recently, accounting measures have been inappropriate and detrimental to the well-being of the organisation. As Zairi (1994) suggests that management accounting concepts and underlying theoretical models of the firm are no longer appropriate, and may indeed negatively impact the ability to compete. This is fully supported by Johnson and Kaplan (1987) in their book *Relevance Lost: The Rise and Fall of Cost Accounting.*

Several authors in the field of performance measurement advocate the need for more research in the area. Among them are Kaplan 1993, 1984, Brignall 1993, Dale 1992 and other prominent authors in the field. All these authors agree that little has been done on the empirical research on performance measurement systems. Most research focuses on performance measures used by industries eg Vora 1992 and CIMA 1993, particularly from the manufacturing sector of the industry (Maskell 1998, Gunasekaran and Li 1998). Only few researches have been conducted on the nature of performance measurement systems.

Moreover, doing research in Malaysia posed several obstacles. Record-keeping is poorly practised in Malaysia due to adoption rate of technology such as Management Information System (MIS). This is rampant in organisations throughout Malaysian industry. There is no proper documentation done by organisations. In addition, cultural factors hinder the researcher. It is part of Asian

culture not to expose or reveal an organisation's practices to outsiders (including researchers). Malaysian culture tends to be covert and conservative. This makes it harder to study the existing systems.

The researcher has scrutinised the literature on all aspects of performance measurement and believes a gap exists in the literature in the following areas:

1. ***developing*** versus developed countries
2. ***service*** versus manufacturing organisations
3. ***public and private (comparative)*** versus public or private (individual) sectors
4. ***healthcare*** versus other industries
5. ***Empirical studies*** versus theoretical studies
6. ***Case study (phenomenology)*** versus survey (positivistic)

All aspects of the areas will be discussed at length in the methodology section. The gaps that exist in these areas are highlighted using the taxonomy approach (see chapter four for details).

The healthcare sector in Malaysia is an emerging field which contributes 12% of Gross National Product (GNP). The government realises the potential of this sector as an international hub for medical services in the Asia Pacific region. Thus, programmes are tailored to reach the target market and at the same time upgrade the public hospitals sector to the international standard. This can be seen from government initiatives to seek accreditation by Malaysian Society for Quality in Healthcare (MSQH) and International Standard Organisation (ISO) by year 2004. (source: researcher interview).

1.5 PURPOSE OF RESEARCH

The general purpose of this study is to understand the nature of performance measurement systems within the context of Malaysian public and private hospitals. This purpose can be accomplished by proposing a framework of performance measurement systems.

This framework will assist the researcher in developing a model based on empirical study. The framework serves as a boundary on which the model operates. Further, the model is developed through examination of performance measurement practices in the Malaysian healthcare industry. It is done through surveys and multiple case studies. The research is largely exploratory in nature due to a broad definition of performance measurement terminology (not standardised) and lack of previous research in the field.

It is the researcher's belief that the understanding of performance measurement practices should be fashioned on the basis of the needs of the developing country and not in terms of what is to be found in other developed countries. It is the opinion of the researcher that the developing country should in fact allow its own environment to guide the development of its own performance measurement systems.

1.6 RESEARCH PROCESS

The research process follows the work of three popular authors in the field of methodology, namely Galliers (1992), Yin (1989) and Munck (1999). Based on their work, a research process model was developed. This framework serves as a

guideline in conducting the research. The researcher has segmented the process into four phases, ie literature review, data collection, data analysis and theory reformulation phase. The researcher has mixed the approaches to give synergy to the research, as Remenyi et al (1998) advocate that ultimately it is more useful to see these two approaches, quantitative and qualitative, as complementary rather than two opposites extremes. Remenyi further pointed out that, "the world is essentially non-deterministic (in any absolute sense) and repeated positivist research will produce different results; a balanced approach is therefore more realistic." Moreover, in line with the researcher's intention to understand the holistic context of performance measurement practices, a phenomenological approach would help to provide the means to interpret practices, thus allow different meanings that managers give to the theoretical framework.

The research started with a survey conducted to provide general information about the healthcare industry in Malaysia. The survey is also used for selection criteria for the case studies. Rather than using convenience sampling, the researcher used systematic sampling (stratified in nature). The researcher applied the critical success factor approach (CSF) to surface out high and low performers in the industry. These selection criteria are based on the literature review made prior to commencing the survey. Details of the selection have been outlined in Chapter four.

Then preliminary case studies were conducted on hospitals that were chosen for the case study. These are hospitals that emerged from the stringent approach imposed on the population to extract extremes from the population. The researcher believes this gives objectivity to the research as the findings, in Chapter Six, validate the researcher's approach to the selection process. Altogether, four (4) hospitals

were chosen. This is illustrated in table 4.2. The hospitals were chosen due to their characteristics on the critical success factors (CSF). Two (2) hospitals scored high in CSF while two (2) scored low in CSF. These are the two extremes of a continuum of public versus private and high versus low CSF index. Details of the process have been outlined in Chapter four.

Finally, in-depth case studies were conducted on the four chosen hospitals. The performance measurement systems were documented in order to identify the structure of performance measurement within the organisations. The performance measurement practices were compared and contrasted to produce a proposed framework.

1.7 CONTRIBUTION OF THE STUDY

Performance measurement systems are an emerging field in developing countries such as Malaysia, especially in the healthcare industry. This research analyses the performance measurement system in the healthcare industry. The study has identified the gap in the literature on performance measurement in healthcare services particularly in developing countries. Specific contributions are made in the following areas:

Firstly, guidelines are given for the development of effective performance measurement systems. These guidelines are derived from actual practice of performance measurement in hospitals that are documented in the course of fieldwork. The model derived is applicable only to the healthcare industry within a developing country.

Secondly, differences between public and private hospitals are identified. Both sectors could gain knowledge from the framework derived. The public hospitals could incorporate certain aspects of performance measurement systems of a private entity, since they are driven by market competitiveness and vice versa for the private. This sectorial learning, in general would help the healthcare industry to achieve organisational effectiveness.

Thirdly, differences are identified between theory and practice. The framework derived from both modes is compared and contrasted so that better understanding of the performance measurement system can be achieved. This will enhance practitioners' understanding provide them with roadmap of systems practiced within the organisations. Furthermore the framework, derived from theory and empirical research, has a more practical value.

Fourthly, the proposed theoretical framework of performance measurement systems in healthcare services helps in the understanding of the nature of performance measurement systems. The framework provides a useful perspective for studying performance measurement in developing and developed countries. This will contribute to existing knowledge by understanding the forces that shape Malaysian performance measurement systems.

Fifthly, the researcher has identified the gaps in performance measurement in healthcare services. Understanding the nature of the gaps allows the managers to improve and upgrade their own systems, thereby creating a better surveillance system. This in turn helps the organisation to stay on course.

Finally, this research identifies a number of areas for further research. Information technology is one area that cannot be neglected. Other areas are knowledge management, Hospital Information Systems and other healthcare areas.

1.8 GLOSSARY OF TERMS

This compilation of definitions of terms used in the thesis is collected from official documents such as SEAMIC 2001, World Health Organisation 1999 and The Academy for Health Services Research and Health Policy, Washington DC. (Accepted definition compiled by organisation through communication with experts in health care policy and service delivery).

Access
An individual's ability to obtain appropriate health care services. Barriers to access can be financial (insufficient monetary resources), geographic (distance to providers), organisational (lack of available providers) and sociological (eg discrimination, language barriers). Efforts to improve access often focus on providing health coverage.

Accreditation
A process whereby a programme of study or an institution is recognised by an external body as meeting certain predetermined standards. For facilities, accreditation standards are usually defined in terms of physical plant, governing body, administration, and medical and other staff. Accreditation is often carried out by organisations created for the purpose of assuring the public of the quality of the accredited institution or programme. The State and Federal government can recognise accreditation in lieu of, or as the basis for licensure or other mandatory approvals. Public or private payment programmes often require accreditation as a condition of payment for covered services. Accreditation may either be permanent or may be given for a specialised period of time.

Acute care
Medical treatment rendered to individuals whose illnesses or health problems are of a short-term or episodic nature. Acute care facilities are those hospitals that mainly serve persons with short-term health problems.

Acute disease
A disease which is characterised by a single episode of a relatively short duration from which the patient returns to his/her normal or previous state of level of activity.

Appropriateness
Appropriate health care is care for which the expected health benefit exceeds the expected negative consequences by a wide enough margin to justify treatment.

Admission
An inpatient admission is the formal admission by a hospital of an inpatient and always involves the allocation of a hospital bed. Healthy babies born in hospital should not be counted if they do not require special care

Bed
A hospital bed is one regularly maintained and staffed for the accommodation and full-time care of a succession of inpatients and is situated in wards or a part of the hospitals where continuous medical care for inpatients is provided. The total of such beds constitutes the normally available bed complement of the hospital. Cribs and bassinets maintained for use by healthy newborn infants who do not require special care should not be included.

Case-mix
A measure of the mix of cases being treated by a particular healthcare provider that is intended to reflect the patients' different needs for resources. Case mix is generally established by estimating the relative frequency of various types of patients seen by the provider in question during a given time period and may be measured by factors such as diagnosis, severity of illness, utilisation of services and provider characteristics.

Chronic care
Care and treatment rendered to individuals whose health problems are of a long-term and continuing nature. Rehabilitation facilities, nursing homes, and mental hospitals may be considered chronic care facilities.

Chronic disease
A disease which has one or more of the following characteristics: is permanent, leaves residual disability; is caused by nonreversible pathological alternation, requires special training of the patient for rehabilitation, or may be expected to require a long period of supervision, observation, or care.

Clinic
A facility, or part of one, devoted to diagnosis and treatment of outpatients.

Diagnosis Related Group (DRG)
Grouping of diagnosis categories drawn from the International Classification of Diseases and modified by the presence of a surgical procedure, patient age, presence

or absence of significant comorbiditics or complications, and other relevant criteria. DRGs are the case-mix measure used in Medicare's prospective payment system.

Discharge
The release of a patient from a provider's care, usually referring to the data at which a patient checks out of a hospital.

Epidemic
A group of cases of specific disease or illness clearly in excess of what one would normally expect in a particular geographic area. There is no absolute criterion for using the term epidemic; as standards and expectations change, so might the definition of an epidemic eg an epidemic of violence.

Epidemiology
The study of patterns of determinants and antecedent of disease in human populations. Epidemiology utilises biology, clinical medicine and statistics in an effort to understand the etiology (causes) of illnesses and/or disease. The ultimate goal of the epidemiologist is not merely to identify underlying causes of a disease but to apply findings to disease prevention and health promotion.

Evidence-based medicine
Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. This approach must balance the best external evidence with the desires of the patient and the clinical expertise of health care providers.

General Hospital
A hospital other than local or rural hospitals providing medical and nursing care for more than one category of medical discipline (eg general medicine, specialised medicine, general surgery, obstetrics etc).

General practice
A form of practice in which physicians without specialty training provide a wide range of primary health care services to patients.

Health
The state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. It is recognised, however, that health has many dimensions (anatomical, physiological, and mental) and is largely culturally defined. The relative importance of various disabilities will differ depending upon the cultural milieu and the role of the affected individual in that culture. Most attempts at measurement have been assessed in terms or morbidity and mortality.

Health facilities
Collectively, all physical plants used in the provision of health services; usually limited to facilities which were built for the purpose of providing health care, such as hospitals and nursing homes. They do not include an office building which includes

a physician 's office. Health facility classifications include hospitals (both general and specialty), long-term care facilities, kidney dialysis treatment centres, and ambulatory surgical facilities.

Health personnel

Collectively, all persons working in the provision of health services, whether as individual practitioners or employees of health institutions and programmes, whether or not professionally trained, and whether or not subject to public regulations. Facilities and health personnel are the principal health resources used in producing health services.

Health Services Research

Health services research is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organisational structures and processes, health technologies, and personal behaviours affect access to healthcare, the quality and cost of health care, and ultimately our health and well-being. Its research domain is individuals, families, organisations, institutions, communities and populations.

Health Status

The state of health of a specified individual, group, or population. It may be measured by obtaining proxies such as people's subjective assessments of their health; by one or more indicators of mortality and morbidity in the population, such as longevity or maternal and infant mortality; or by using the incidence or prevalence of major diseases (communicable, chronic , or nutritional). Conceptually, health status is the proper outcome measure for the effectiveness of a specific population's medical care system, although attempts to relate the effects of available medical care to variations in health status have proved difficult.

Hospital

An institution whose primary function is to provide inpatient diagnostic and therapeutic services for a variety of medical conditions, both surgical and nonsurgical. In addition most hospitals provide some outpatient services, particularly emergency care. Hospitals may be classified by length of stay (short-term or long-term), as teaching or non-teaching, by major type of service (psychiatrics, tuberculosis, general and other specialties such as maternity, paediatrics or ear, nose and throat), and by type of ownership or control (Federal, State or local government).

Inpatient

A person who has been admitted at least overnight to a hospital or other health facility (which is therefore responsible for his/her room and board) for the purpose of receiving diagnostic treatment or other health services.

Intervention strategy

A generic term used in public health to describe a programme or policy designed to have an impact on an illness or disease.

Joint Commission of Accreditation of Healthcare Organisation (JCAHO)
A national private, nonprofit organisation whose purpose is to encourage the attainment of uniformly high standards of institutional medical care. Establishes guidelines for the operation of hospital and other health facilities and conducts survey and accreditation programmes.

Local or rural hospital
A hospitals usually in a rural area, permanently staffed by one or more physicians, which in respect of its function is also a general hospital, but provides medical and nursing care of a more limited range than that provided by principal general hospitals.

Long-term care
A set of healthcare, personal care and social services required by persons who have lost, or never acquired, some degree of functional capacity (eg the chronically ill, aged, disabled or retarded) in an institution or at home, on a long-term basis.

Managed care
The body of clinical, financial and organisational activities designed to ensure the provision of appropriate healthcare services in a cost efficient manner. Managed care techniques are most often practised by organisations and professionals which assume risk for a defined population (eg health maintenance organisations).

Medical error
An error or omission in the medical care provided to a patient. Medical error can occur in diagnosis, treatment, preventative monitoring, or in failure of a piece of medical equipment or another component of the medical system. Often, but not always, medical errors result in adverse events such as injury or death.

Morbidity
The extent of illness, injury, or disability in a defined population. It is usually expressed in general or specific rates of incidence or prevalence.

Mortality
Death. Used to describe the relation of deaths to the population in which they occur. The mortality rate (death rate) expresses the number of deaths in a unit of population within a prescribed time and may be expressed as crude death rates (eg total deaths in relation to total population during a year) or as death rates specific to diseases and, sometimes, for age, sex, or other attributes (eg number of deaths from cancer in white males in relation to the white male population during a given year).

Nurse
An individual trained to care for the sick, aged, or injured. A nurse can be defined as a professional qualified by education and authorised by law to practise nursing. There are many different types, specialties, and grades of nurses.

Occupancy rate
A measure of inpatient health facililty use, determined by dividing available bed days by patient days. It measures the average percentage of a hospital's beds occupied and may be institution-wide or specific to one department or service.

Outcome
A patient's health status ie medical and physiologic (biological, pathological, behavioural), functional status and well-being (quality of life, productivity, disability), habits or health risk states.

Provider
Hospital or licensed health care professional or group of hospitals or health care professionals that provide healthcare services to patients. May also refer to medical supply firms and vendors of durable medical equipment.

Primary health care facilities
An establishment serving as the first level contact point in the country's health system and providing outpatient medical and nursing care under a physician's supervision, though the physician may or may not be its permanent staff. This category includes general practitioners' offices, peripheral health stations etc.

Referral
The process of sending a patient from one practitioner to another for healthcare services. Health plans may require that designated primary care providers authorise a referral for coverage of specialty services.

Secondary care
Services provided by medical specialists who generally do not have first contact with patients (eg cardiologist, urologist, dermatologist).

Sentinel events
An unexpected occurrence or variation involving death or serious physical and psychological injury or the risk thereof. Serious injury specifically includes loss of limb or function. The event is called 'sentinel' because it sends a signal or sounds a warning that requires immediate attention.

Specialised hospital
A hospital providing medical and nursing care primarily for only one discipline, such as mental disorders, maternity, infectious diseases, leprosy, and tuberculosis. This category does not include the specialised department administratively attached to a principal general hospital and sometimes located in an annexe or separate building, their beds (and related data) are included with the principal general hospital

Tertiary care
Services provided by highly specialised providers (eg neurologists, neurosurgeons, thoracic surgeon, intensive care units). Such services frequently require highly sophisticated equipment and support facilities. The development of these services

has largely been a function of diagnostic and therapeutic advances attained through basic and clinical biomedical research.

Vital statistics
Statistics relating to birth (natality), death (mortality), marriages, health and diseases (morbidity).

1.9 ORGANISATION OF THE THESIS

The thesis will be presented in seven chapters, including Chapter One, the Introduction chapter.

Chapter One: *INTRODUCTION*

The chapter starts with a background of performance measurement systems in the healthcare industry in Malaysia. The researcher defines terminology and describes the problem statement in the field of performance measurement.

Chapter Two*: LITERATURE SURVEY*

The chapter begins with an overview of performance measurement topics from general to specific. Then it introduces relevant literature, also from general to specific. Services management topics are discussed from definition to current issues facing service organisations. Healthcare services topics are elaborated with multidimensional perspectives and the last topic covered is hospital administration models; concepts derived from this section are discussed at length.

Chapter Three: *PERFORMANCE MEASUREMENT PRACTICES IN MALAYSIA*

The chapter describes the Malaysian healthcare industry and further elaborates some secondary data obtained from government and non-governmental bodies. The differences between public and private sectors are also discussed.

Chapter Four: *RESEARCH DESIGN AND METHODOLOGY*

This proceeds with research objectives and questions posed in the study. The researcher also highlights the research stance based on some sociological inquiries. This chapter elaborates in detail the research design (roadmap) and methodology (process framework) undertaken in this research inquiry.

Chapter Five: *DATA ANALYSIS FOR SURVEY*

This chapter synthesizes data produced from the survey in which the preliminary model is developed. It also discussed findings from the fieldwork.

Chapter Six: *DATA ANALYSIS FOR CASE STUDY*

This briefly describes four (4) organisations chosen for the case studies. This chapter analyses the 'within' and 'across' cases to discern patterns that emerge from the empirical evidence.

Chapter Seven: *FRAMEWORK DEVELOPMENT*

This chapter postulates a framework explicate from multiple case studies. It discusses in great detail the characteristics of the framework. This chapter also explore future challenges of the Malaysian healthcare industry.

Chapter Eight: *CONCLUSIONS AND RECOMMENDATIONS*

This chapter conclude the findings from the previous chapter. Recommendations are given based on the researcher's experience and current investigation of the topic.

Figure 1.2 illustrates the overview of the thesis for the purpose of clarity.

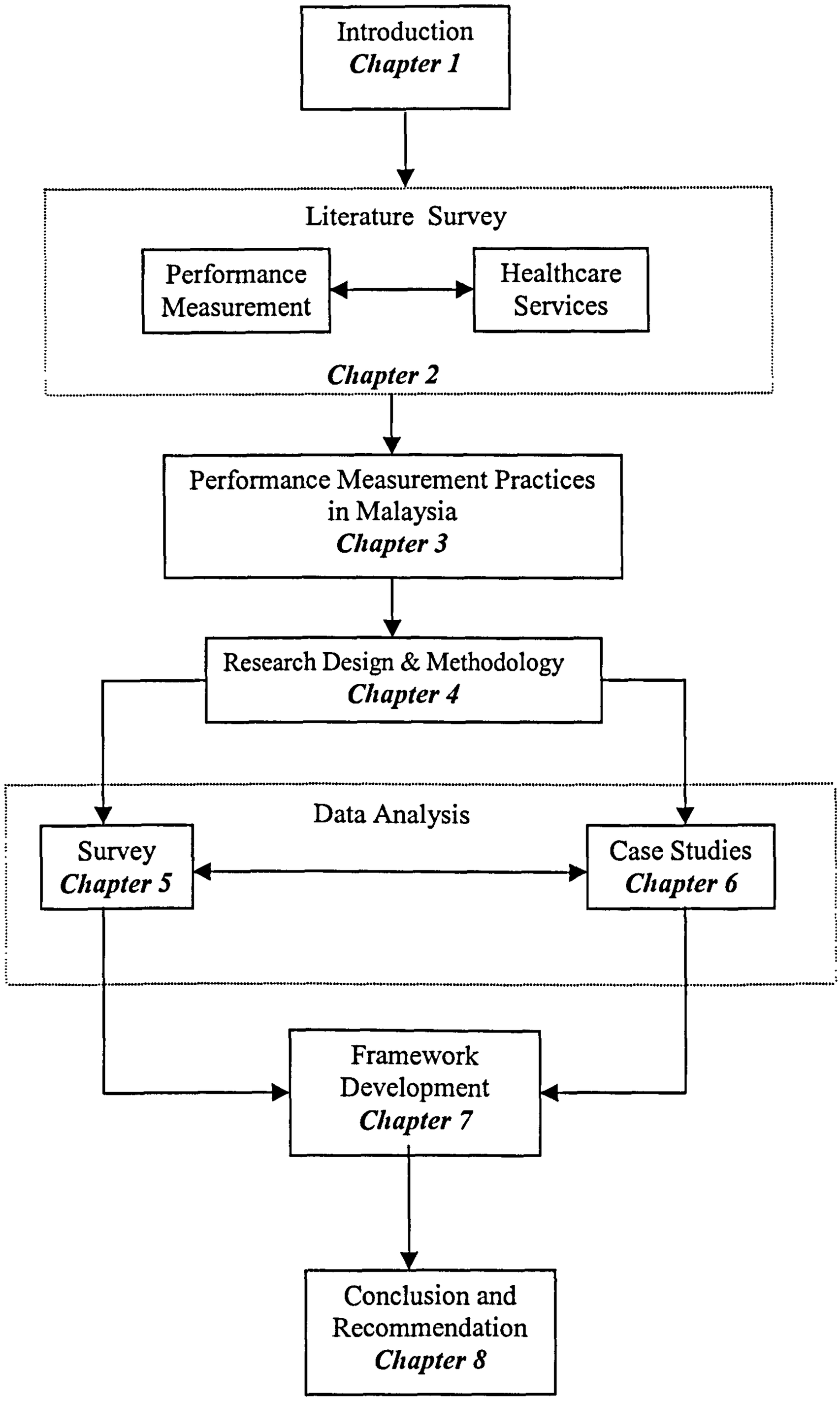

FIGURE 1.2 OVERVIEW OF THE THESIS

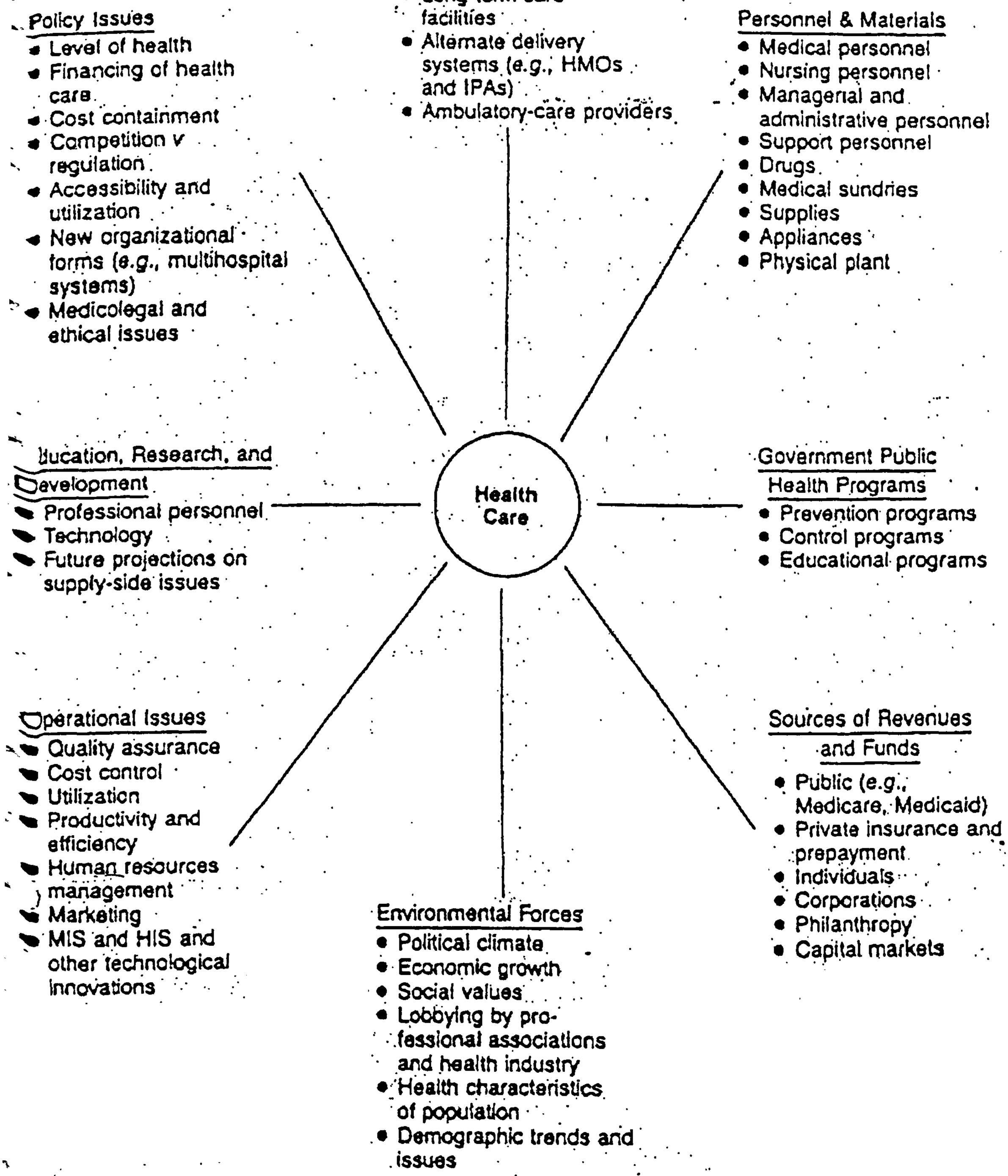

Figure 1.3 The Health care Wheel

Source: Levey, S and Loomba, N (1984), Health Care Administration; A Managerial Perspective, JB Lippincott Company, Philadelphia, London.

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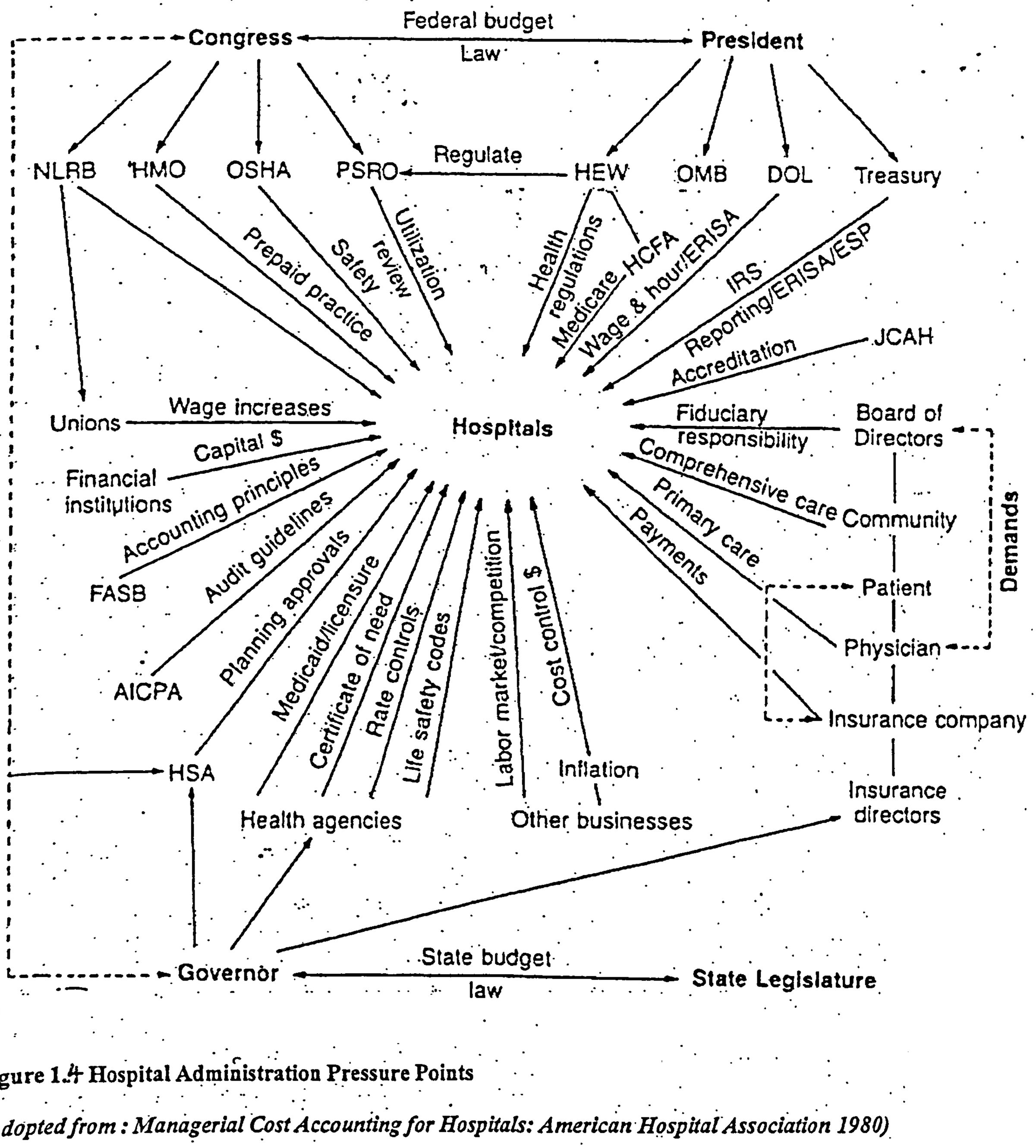


Figure 1.4 Hospital Administration Pressure Points

(Adopted from : Managerial Cost Accounting for Hospitals: American Hospital Association 1980)

CHAPTER 2
LITERATURE SURVEY

2.1 INTRODUCTION

The purpose of this chapter is to provide an overview of the literature in the field of performance measurement and healthcare services. The literature survey gives a schematic view of matters discussed in the thesis. This review is divided into four components.

The first component examines the nature of performance measurement in general. Topics discussed are definition, measurement needs and differences between measurement and management. The second component deals with performance measurement in healthcare services. This means putting measurement into context. Topics discussed include definition, perspectives and healthcare reform. The third component is explicating well-known frameworks in the field of performance measurement and healthcare services. The last component is a discussion of the gap identified in the study, which is highlighted by the taxonomy approach. Gaps are identified in the study to highlight areas that are not well researched in the field. This is crucial, as performance measurement in the field of healthcare in the context of Malaysia is not well researched. Moreover, analysing by a 'system' approach is a new way of looking at performance measurement, "old wine in a new bottle".

Performance measurement is a topic which is often discussed but rarely defined (Neely, 1995). Performance measurements have myriad definitions. No

single writer agrees on the definition of performance measurement. For example, Sink (1991) views performance measurement as a "mystery....complex, frustrating, difficult, challenging, important, abused and misused". It is a topic that has long been recognised as of fundamental value for business.

"When you can measure what you are speaking about, and express it in numbers, you know something about it.... [otherwise] your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in thought advanced to the stage of science". (Lord Kelvin, 1824-1907).

Today organisations are bombarded by information from every direction. This ocean of information is meaningless unless managers are aware of its value and manage information to their competitive advantage. Thus, some form of control to measure performance of businesses is back in fashion. (Neely et al, 1995). This overwhelming phenomenon has captured Eccles' (1991) attention five years ago, when he predicted that a new set of measures would emerge, non-financial in nature. Grady (1991) supports his views, postulating that "business strategies change from time to time, and performance measures must keep pace with these changes." Consequently, performance measurement has become the essential tools for businesses to survive, especially in a turbulent environment. The Royal Society of Arts, Manufacturers and Commerce (RSA) concludes their findings on to the role of tomorrow's company with these words:

"to achieve sustainable business success in the demanding world marketplace, a company must..... use relevant performance measures". (RSA, 1994)

Zairi (1994) reinforces the RSA findings with his analogy of organisation without measurement as "like hunting ducks at midnight without a moon, lots of squawking and shooting with only random results and with high probability of damage." Neely (1999) pointed out that today managers "measure the wrong things." Moreover, they

use traditional measures that are historically oriented. He gives the analogy of driving a car using only a rear view mirror for business organisations today. The measures lack predictive value to foresee an organisation's capability to move forward with the competition. The need to measure is crucial in order to align measures with strategy. This is important as organisations develop a roadmap for the journey they are making. Many authors in the field of performance measurement strongly agree with Zairi's definition. Among them are Kaydos (1998), Neely (1999), and Fornell (1995).

Why has performance measurement recently gained recognition as such an important tool in the business arena? What is it about performance measurement that has become so relevant to today business? " After all, it has been recognised that performance measures are an integral part of the planning and control cycle", (Barnard, 1962). Neely (1999) gives seven reasons why a performance measurement revolution has hit the industry:

- ***Changing nature of work*** - The basis of allocating the direct labour is no longer valid in today's business due to manufacturing automation. Process automation has made it possible for manufacturing firms to reduce direct labour from 50 percent to 10 percent. This has resulted in the development of alternative methods of product costing – most notably activity-based costing and through-put accounting. (Cooper 1987a,b; Galloway and Waldron 1999a,b; 1989a,b).

- ***Increased competition*** - Undoubtedly, competition has become intense in today's business due to globalisation. Most organisations must operate within specific

limitations eg deregulation of UK telecommunications market, European Commission's skies policy on flying zones, introduction of Japanese manufacturing practices and many other constraints. The pressure to become effective as well as efficient is necessary in order to stay ahead of competitors. Organisations are forced to "compete in markets where value rather than cost is the primary driver " (Neely 1999). Also, "many organisations have realised one of the hidden benefits of matching measures and strategies – namely that measures can encourage the implementation of strategy" (Neely et al, 1994). Chakravarthy (1988) shares similar views.

- ***Specific improvement initiatives*** - There are many organisations that have taken specific improvement initiatives to be effective and efficient. Themes such as total quality management (TQM), lean production, world class manufacturing, and reengineering have been current in organisations for a while. All these generic tools and techniques have one thing in common. They make use of performance measurement. As Neely (1999) stated, " Before any organisation can determine what it needs to improve, however, it has to establish where and why its current performance falls short. Hence, the need for performance measures."

- ***National and international quality awards*** - Industry recognition of the intense efforts to improve has led to the establishment of national and international quality awards. The first award was introduced by the Japanese Union of Scientist and Engineers (JUSE) called the Deming Prize for "the contribution to

quality and dependability of products" (Deming, 1986). Another high profile award is the Baldridge award available in the United States, and another recent award is the European Foundation for Quality Management (EFQM). Each of these awards requires organisations to submit "a complete comprehensive self-assessment as part of the application process" (Neely, 1999). It is obvious that the advantage that these awards have inculcated in each and every organisations is the recognition of the need for performance measurement systems.

- ***Changing organisational roles*** - During the eighties and nineties, a traditional performance measurement system was always in the interest of the accounting professions. In the mid-nineties, Cable and Wireless renamed their "Corporate Management Accounting Group" to "Group Performance Analysis and Development" which actually changed roles to be more actively involved in the analysis of performance data. Business is aware of its changing role as it accommodates itself to the environment in which it exists.

- ***Changing external demands*** – Deregulation of industry has resulted in organisations managing their processes in a more effective and efficient manner. They have to ensure that performance is up to standard, as this is important if the organisation desires to stay competitive (otherwise they will be closed down when the regulators' requirements are not met).

- ***Power of information technology***- The final driver in the performance revolution is the power of technology. Technology has made it possible to capture data

and analyse it easily, for example, data mining in supermarkets, electronic point-of-sale systems and many others. "Indeed many vendors of these software packages are now proactively linking their product offerings to balanced measurement frameworks, such as Kaplan and Norton's balanced scorecard" (Neely, 1999).

Many authors in the field of performance measurement agree that the field is growing and expanding, and indeed some authors term it a revolution (Neely, 1997; Kaplan and Norton, 1992, Bititci, 1995, 1996 and many others).

2.2 PERFORMANCE MEASUREMENT SYSTEM

This section is devoted to explaining the importance of performance measurement systems. In order to understand PMS, definition of the terminology is in order. Then, the researcher will explain why measurement is needed in today's businesses. Lastly, the researcher will differentiate between performance measurement and performance management. Performance measurement is a subset of performance management; as Feurer and Chaharbaghi (1995) put it metaphorically, performance measurement is the heart of performance management.

2.2.1 Definition of Terminology

In this section, the researcher aims to define the terms that frequently emerge in the performance measurement literature: the concept of performance measurement; performance measures; and performance measurement systems. A myriad of

definitions of performance measurement can be found in a diverse group of academics from a multitude of disciplines, which include ***Accounting*** (Bromwich and Bhimani, 1989; Chandler, 1977; Cooper, 1987a,b; Johnson, 1983; and Kaplan and Norton, 1996), ***Business Strategy*** (Chakravathy, 1986 and Simons, 1995), ***Human Resources Management*** (IPM, 1992), ***Production and Operations Management*** (Dixon et al, 1990; Fitzgerald et al, 1991; and Neely et al, 1996), ***Marketing*** (Fornell, 1992); and ***Organisational Behaviour (Psychology)*** (Meyer and Gupta, 1994). All of these definitions have their owners' characteristics, which suit their own functions and purposes. The performance measurement definitions are as follows:

2.2.1.1 Performance Measurement

Zairi (1994) defines performance measurement as a "systematic assignment of numbers to entities". Churchman (1959) suggests that the function of measurement is to "develop a method of generating a class of information that will be useful in a wide variety of problems and situations." However, Mason and Swanson (1981) disagree with Churchman's definition, defining measurement as "the process of obtaining symbols to represent the properties of objects, events, or states". Consequently, the goal of performance measurement is to "differentiate among the dimensions of organisational goal, structure and....integrate these into a response to the scorekeeping questions." The above definition is structured in an input based approach of measurement.

Meanwhile, Glasser (1991) sees performance measurement "as a process" which he believes can be managed efficiently if the process can be controlled.

Evangelidis (1992) supports Glasser's definition, and he states "the process of determining how successful an organisation/individual has been in attaining their objectives". This definition is a process-based approach which has gained wide recognition by many authors in the field.

However, Euske (1984) disagrees with all the above definitions, and believes that "what is measured is rarely performance itself but some specific attribute relating to performance". Euske is more concerned with variables that make up a generic definition of performance measurement. This coincides with Fitzgerald and Moon's (1991) framework for Results and Determinants of performance measurement. Lynch and Cross (1991) define performance measurement as "feedback on activities that motivate behaviour leading to continuous improvement in customer satisfaction, flexibility and productivity." This definition is more comprehensive in terms of incorporating customers as a function of performance measurement. Lynch and Cross attempt to capture measurement in the context of business activities (processes) and giving end-user (customer) personal attributes (satisfaction) towards those activities. Sharman (1993) states the definition differently from Euske and Lynch and Cross, his definition is to "provide organisations with a device through which to focus and enunciate accountability". Sharman's definition is parallel to Sloma's (1980), which suggests that the purpose of performance measurement is "to provide an objective, impersonal basis of performance evaluation". Both authors highlight the functional aspects of performance measurement as a tool to signal to organisations about evaluating performance, so that some form of accountability can be carried out by managers to focus and align those activities. The above definition is in regard to an outcome-based approach to performance-based approach.

2.2.1.2 Performance Measures

Performance measures are a metric assigned to the attributes of performance used by organisations. They are sometimes referred to as performance indicators, or performance criteria, thereby often causing confusion among readers. Therefore, it is crucial at this stage to shed some light on the definition of performance measures. Performance measures are defined by various authors on the following lines.

Euske (1984) defines performance measures as "characteristics of output that are identified for purposes of evaluation." Hronec (1993) defines them as a 'vital sign' of an organisation which "quantify how well the activities within a process or output of a process achieve a specified goal". Hronec's definition is inclusive of the process itself, which he believes to be important to the company to track the activities in order to be profitable. Geanuracos and Meiklejohn (1993), state that "a measure is a record of the performance of an activity", and Turney (1992) uses a similar contextual definition: "communicate how an activity is meeting the needs of internal and external customers". Both authors define measures as activities that require monitoring so that results can be predicted precisely.

Schnoebolen (1993) suggests that there is a need to align measures at all levels within organisations, and suggests, "they must be chosen carefully to provide beneficial feedback on performance at every level of organisation." Hubbard (1992) supports the idea of measures as an effective control system to the whole organisation and recommends, "above all, performance measurement must relate to the company's strategic objectives." While Globerson (1985) defines performance measures as "the relative element used to evaluate macro-and micro-, long-term and short-term, flow and static, functional and overall performance". Globerson's

definition encompasses the functionality of the definition with attributes to measure it. The famous quality guru, Juran (1992), defines measures as "a defined amount of some quality feature that permits evaluation of that feature in numbers". Hax and Maijuf (1991) take a different stand, defining performance measures as "quantitative indicators of the performance of the firm defined at different levels: corporate, business, and functional." This is in congruence with Snoebolen's (1993) and Hubbard's (1992) definition of performance measures. Fortuin (1988) on the other hand, defines performance measures as tools "to compare actual results with a pre-set target and to measure the extent of any deviation". Fortuin is interested in looking at the impact of performance measurement as a tool for corrective actions.

Hendrick (1994) states that performance measures "should be important causal factors related to managerial and employee behaviour." It is more of an internal factor that drives an organisation's performance. Thus, Grady (1991) added that measures must "provide all management levels with feedback on how well the strategies and objectives are being met. They must provide focus on critical processes, enable proactive problem identification and correction, and promote continuous improvement". Grady's definition consists of all aspects of the measurement, in which critical success factors are highlighted along with actions as a result of the measures. All of these definitions form an attribute of the performance measures, such as function, effect, control, criteria, evaluation etc.

2.2.1.3 Performance Measurement Systems

Once the foundation has been laid down for performance measurement and performance measures, the next step is to integrate this concept into a system. A

system, by definition, is the means to handle complexities and process information efficiently. It assists in the integration of individual measures into a more effective system of measurement. Thus, authors in the area of performance measurement have numerous definitions of performance measurement systems (PMS).

Measurement forms an integral part of a management control system (Anthony, 1965). Churchman (1959) suggested that measurement has "attained a social prestige....it is better to measure than not to measure". Srikanth (1992) views PMS as a dynamic process, and states that it is "a pre-quisite to improving productivity and competitiveness. It is undoubtedly the most important decision a company can make". Moreover, Lessner (1989) supports Srikanth's views and states that, "a well-designed and properly applied performance measurement system is the strongest management tool available for controlling operations and fostering change".

Ijiri and Jaedicke (1981) state that a measurement system consists of an object whose property is to be measured, a set of rules and procedures, and a measurer. Juran (1992) uses similar model of measurement system but refers to a 'sensor' rather than a measurer. McNair et al (1981) state that the purpose of PMS is to "integrate organisational activities across various managerial levels and functions". Hronec (1993) views PMS as "tools for balancing, multiple measures (cost, quantity and time) across multiple levels (organisation, process, people)". Hronec outlines the attributes that are in the system in order to understand the system design. Misner and Fawcett (1991) suggest that an effective PMS "should consist of not only traditional financial and cost accounting criteria used by upper management, but also tactical performance criteria that are used to assess the firm's current level of

competitiveness and direct its effort in attaining a desired competitive position". Misner and Fawcett's definition is more comprehensive than Hronec's in terms of encompassing accounting as a traditional measure that supports operations. Meyer (1994) agrees with Hronec and states that the design of PMS "should reflect the basic operating assumptions of the organisation it supports."

Harbor (1997) points out that PMS, "involves the collection, synthesis, delivery and display of information related to the measurement of work output and accomplishments, as well as in-process parameters that effect work output and accomplishments." He believes all elements in the organisation form a measurement system. His view is supported by Edson (1988) and Talley (1991) in which they stress that PMS function is a continuous improvement. Meanwhile, Globerson (1985) defines PMS as a "systematic way of evaluating the input, output, transformation and productivity in manufacturing and non-manufacturing operations. Globerson's definition agrees with Slack et al (1999) in their operational views of an organisation in terms of input-process-output.

Hayes et al (1988) define PMS in a broader sense as a "dynamic, broadly based system of measurement that will generate information that can be used at different levels in the organisation for different purposes". Lockamy (1993) agrees with the definition and extends it: "to offer a means of communicating objectives and achievement throughout the organisation and for ensuring that the firm is using its resources in the most effective manner." All of these definitions take account of the environment in which the system will interact, thereby aiming to provide a guideline for designing and developing a robust measurement system.

2.2.2 The Need for Measurement

Organisations have been measuring their performance since the early twentieth century. Chandler (1977) found that most of the basic methods used to manage big business today were in place by 1910:

> *"In 1903, three Du Pont cousins consolidated their small enterprises with many other small single-unit family firms. They then completely reorganised the American explosives industry and installed an organisational structure that incorporated the 'best practice' of the day. The highly rational managers at Du Pont continued to perfect these techniques, so that by 1910 that company was employing nearly all the basic methods that are currently used in managing big business."*

The need to measure in every organisation has become of paramount importance. Organisations that survive have a formidable and robust measurement system that act a signal for managers to focus on a corrective action. This new focus on measurement has triggered an industrial revolution in every aspect of business, resulting in a completely new way of monitoring industry. The importance of measurement is reflected in certain key areas:

- **Managing Change** - Brignall (1993) and Adair-Heely (1989) suggest that performance measurement is a key agent of change. Organisations evolve over time and measurement is necessary to align an organisation's activities. Olion and Rynes (1991) state that the primary requirement of performance measurement is to integrate measures vertically (across level) and horizontally (across function). Olion and Rynes (1993) agree with Brignall and Adair-Heely that in order to change measures they must be shared and communicated across the organisation. Jeans and Marrow (1991) states that performance measurement is "widely accepted as an important part of any strategy". It is known that measures should be matched with the organisational context (Neely

et al, 1997). Moreover, Fitzgerald et al (1991) argue that performance measurement is actually is the spur to organisational learning and timely action at the appropriate organisational level. An organisation's response towards change becomes a learning process that allows it to develop into a more efficient machine (Morgan, 1998).

- **Planning and Control Function** - Drucker (1973) suggested that measurement is a "basic element of the work of the manager". Barnard (1962) also states that, "it has long been recognised that performance measures are an integral part of the planning and control cycle". Moreover, Euske (1984) states "measurement process is central to the operations of an effective and efficient planning, control or evaluation system". This view is mechanistic in nature since it believes that performance measures have an impact on a system, any system including humans. "It is assumed that measurement provides a means of capturing performance data which can be used to inform decision making" (Neely et al, 1997). Tally (1991) states that "you cannot manage what you cannot measure. You cannot measure what you cannot operationally define. You cannot operationally define what you cannot understand. You will not succeed if you do not manage".

- **Communication** - Juran (1992) stresses the importance of measurement in communication and suggest that, "vague terminology is unable to provide precise communication. It becomes necessary to say it in numbers". Stickler (1990) on the other hand, believes that these numbers need to be transparent to all levels of

the organisation, and states that, "everyone in the company can see where you started, what you have achieved and what your ultimate goals are". Beischel (1991) highlighted the fact that performance measurement will allow communication between senior executives, 'top floor', and technical staff, 'shop floor'. Again, communication within an organisation across functions and levels is crucial in order to compete successfully.

- **Continuous Improvement** - Fray (1988) states that "outstanding performance cannot be achieved unless one can define and measure performance". Sink and Tuttle (1989) suggest similar ideas that "perhaps the only really valid research for measuring performance……is to support and enhance improvement". Both authors agree that continuous improvement is inevitable to the success of any organisation. It is an incremental and subtle change, but has a deep impact on the outcome.

  To implement this improvement process, Miller (1992) suggests techniques such as "a scorecard to report how well improvement efforts are working. Performance measurement is an integral part of continuous improvement". Moreover, Harrington (1991) shares the same concept as Miller, which states that, "the beginning of improvement: if you cannot measure the activity, you cannot improve it". Pheasey (1991) suggests that measurement is "central to organised improvement efforts and therefore critical to increased competitiveness".

- **Motivation** - Locke et al (1981) found that performance improves if individuals are given targets, and is maximised if targets are seen as challenging but achievable. Moreover, White and Flores (1987) made similar findings. Euske (1993) states that the impact of performance measurement on organisational behaviour depends on the organisational context of measurement, the use made of measurement, the degree of agreement between measurement and organisational objectives and individual motivational response to measurement. Measurement leads to motivation, if the instruments used are relevant and can empower individuals in the organisation to assume responsibility.

- **Resource Allocation** - Thor (1991) states that measurement "helps an organisation direct its scarce resources to the most attractive improvement activities. It can force strategic thinking down into the organisation's measurement, and also provides a direct stimulus to action". Kaydos (1999), supports Thor's views that "managers can be aware of most of the problems……but without measures in place, there is no way for them to know the relative importance of those problems." The primary function of a manager is to know where and how to allocate resources so that wastage can be minimised.

There are many shortcomings in using financial measures to gauge organisations' strategic direction. According to Neely (1999), traditional financial measures are criticised because they:

- Encourage short-termism, for example the delay of capital investment. (Banks and Wheelwright, 1979; Hayes and Abernathy, 1980).
- Lack strategic focus and fail to provide data on quality, responsiveness and flexibility. (Skinner, 1974)
- Encourage local optimisation, for example "manufacturing" inventory to keep people and machines
  Busy. (Goldratt and Cox , 1986; Hall, 1983)
- Encourage managers to minimise the variances from standard rather than seek to improve continually. (Schmenner, 1988; Turney and Andersen, 1989)
- Fail to provide information on what customers want and how competitors are performing. (Camp, 1989; Kaplan and Norton, 1992)
- Historically focus. (Dixon et al, 1990)
- Rarely integrate with one another or at least align to the business process. (Lynch and Cross, 1991)

2.2.3 Performance Management versus Performance Measurement

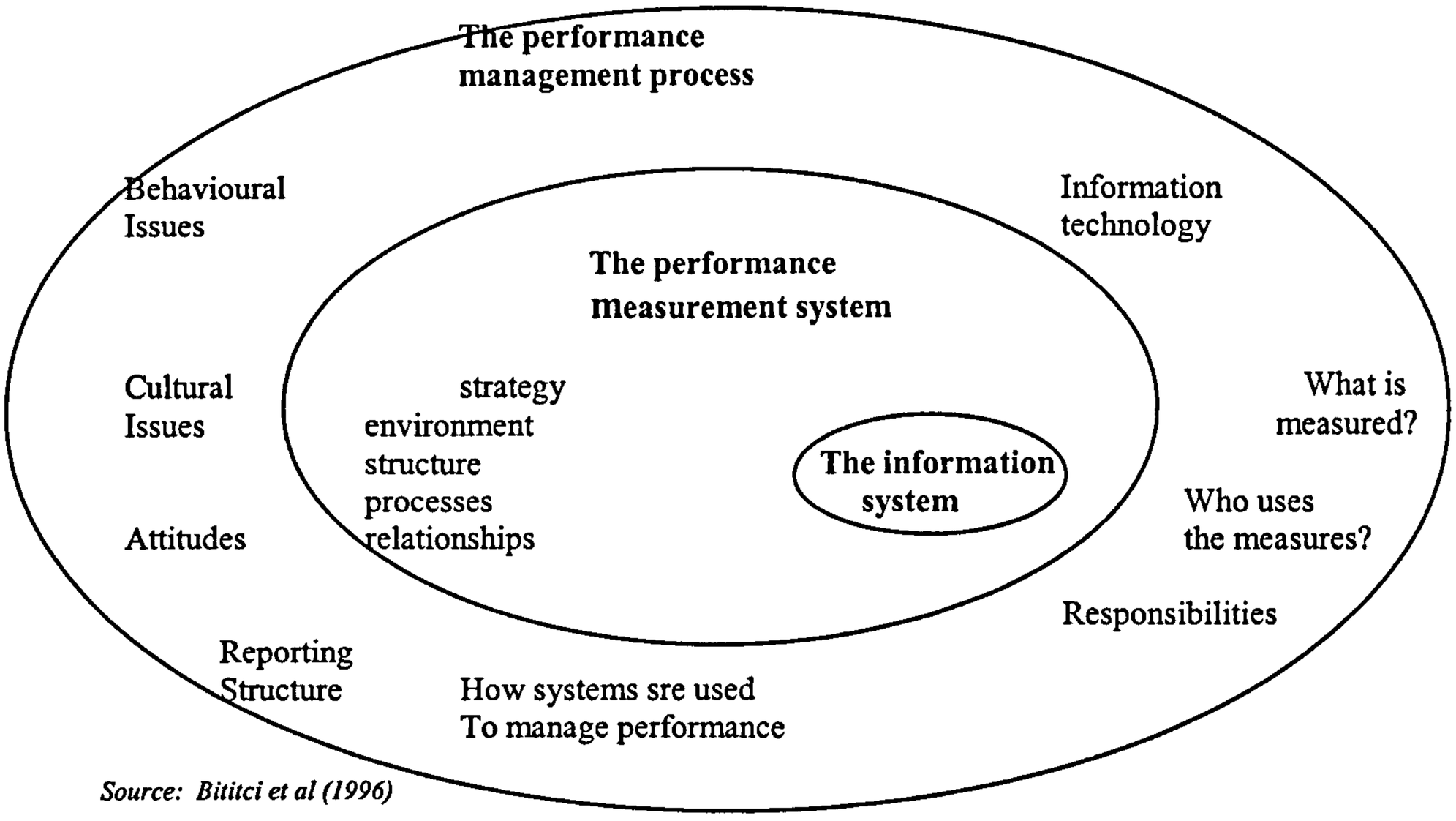
Performance measurement has been discussed in the previous section. In this section the researcher will highlight performance management as compared to performance measurement. The latter is a subset of performance management, which deals with whole processes in the organisation from conceptualisation to the implementation stage (figure 2.3).

According to Amaratunga et al (2001) performance management describes the use of performance measurement information to effect positive change in organisational cultures, systems and processes, by helping to set agreed performance goals, allocating and prioritising resources, informing managers to either confirm or change change current policy or directions to meet these goals, and sharing results of performance in pursuing goals.

On the other hand, Bititci defines performance management differently. He believes that the central core of performance management is the information systems that need to be managed so that it will be deployed accordingly (figure 2.1). Bitici (1997) defines performance management as "how an organisation uses various systems to manage its performance." He reveals the structure of performance management systems in the context of measurement systems. In order to effectively manage the processes, Bitici (1997) advocates that deployment of business objectives is crucial in determining success. Deployment is defined as cascading business objectives and policies from top to bottom of the hierarchical structure of the organisation in order to ensure that performance measures used at various level of the organisation reflect the business objectives and policies.

Bailey (2000), defines performance management as " the systematic, data-oriented approach to managing people at work that relies on positive reinforcement as the major way to maximise performance. It is used across the world in a wide variety of organisations from private sector business and industry, to public sector government and non-profit agencies. It has also been used to address many organisational issues including quality control, safety and productivity improvement."

In order for performance measurement systems to be effective, Feurer and Chaharbaghi (1995) propose that the design of the system should allow the organisation to learn how to:



Source: Bititci et al (1996)

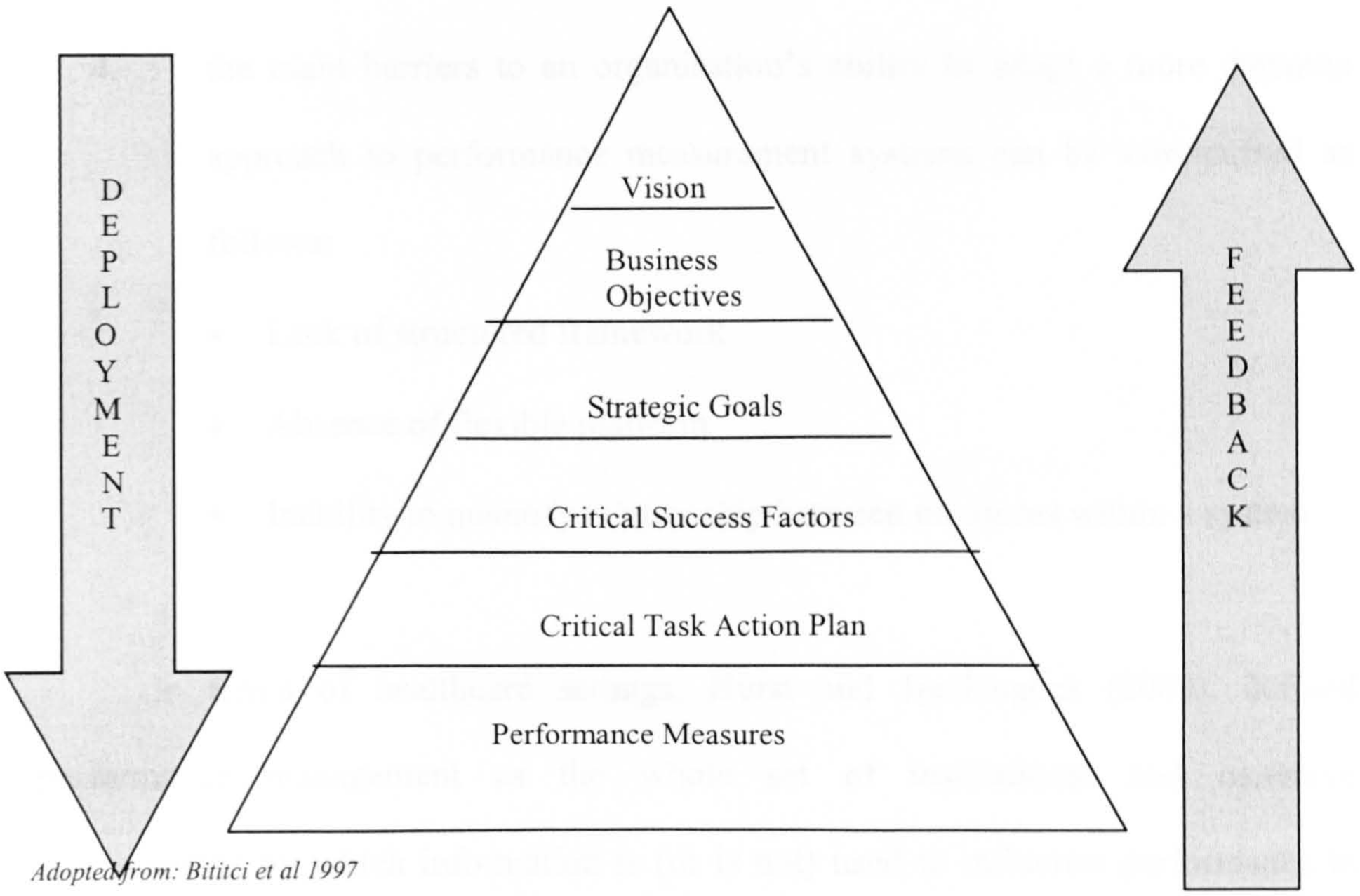
FIGURE 2.1 PERFORMANCE MANAGEMENT PROCESS & THE POSITION OF PERFORMANCE MANAGEMENT SYSTEMS

1. evaluate the internal and external environments of the organisation;
2. determine underlying causes behind the existing situation together with their relationship
3. identification of future trends and their implications for the organisations
4. identify the organisation's goals in order to determine where to be in the future
5. acquire knowledge regarding the relationship between actions and goals
6. define and communicate new objectives throughout the organisations
7. align operations and support objectives for instituting a common purpose
8. develop a system for rewarding achievements, which acts as a catalyst for motivating further change.

Feurer and Chaharbaghi (1995) advocate that, "design, implementation and use of performance measurements should be a simultaneous and continuously evolving process in which changes in the strategic direction and learning requirements of an organisation are constantly accounted for." This view is supported by Harbour (1997) in which he lists six keys to creating effective performance measurement:

- measurement drives behaviour
- measure real work and output
- PMS costs money to develop and maintain – focus on capturing critical few (indicators)
- To ensure usefulness and relevance, tie a specific performance measurement to a specific user by name/position.
- Develop measures and associated capture/delivery systems that provide adequate warning of negative changes
- Performance measurement displays should be easily and quickly understandable.

The framework in figure 2.2 illustrates Bititci's belief that systems need to be a proactive closed loop in order to feed to all functional areas of the activities. This is done through deployment of the functional strategies to all business processes via the performance measurement system. He further postulates that at the heart of the performance management process is an information system. This coincides with Feurer and Chaharbaghi's notions of performance management. Integration according to Bititci (1997) means that:



Adopted from: Bititci et al 1997

FIGURE 2.2 DEPLOYMENT AND FEEDBACK MODEL

"the performance measurement system should enable the correct deployment of the strategic and tactical objectives of the business as well as providing a structured framework to allow the relevant information to feed back to the appropriate points to facilitate the decision and control processes."

Bitici et al (2000), after a collaborative audit with several companies, formulated the following findings:

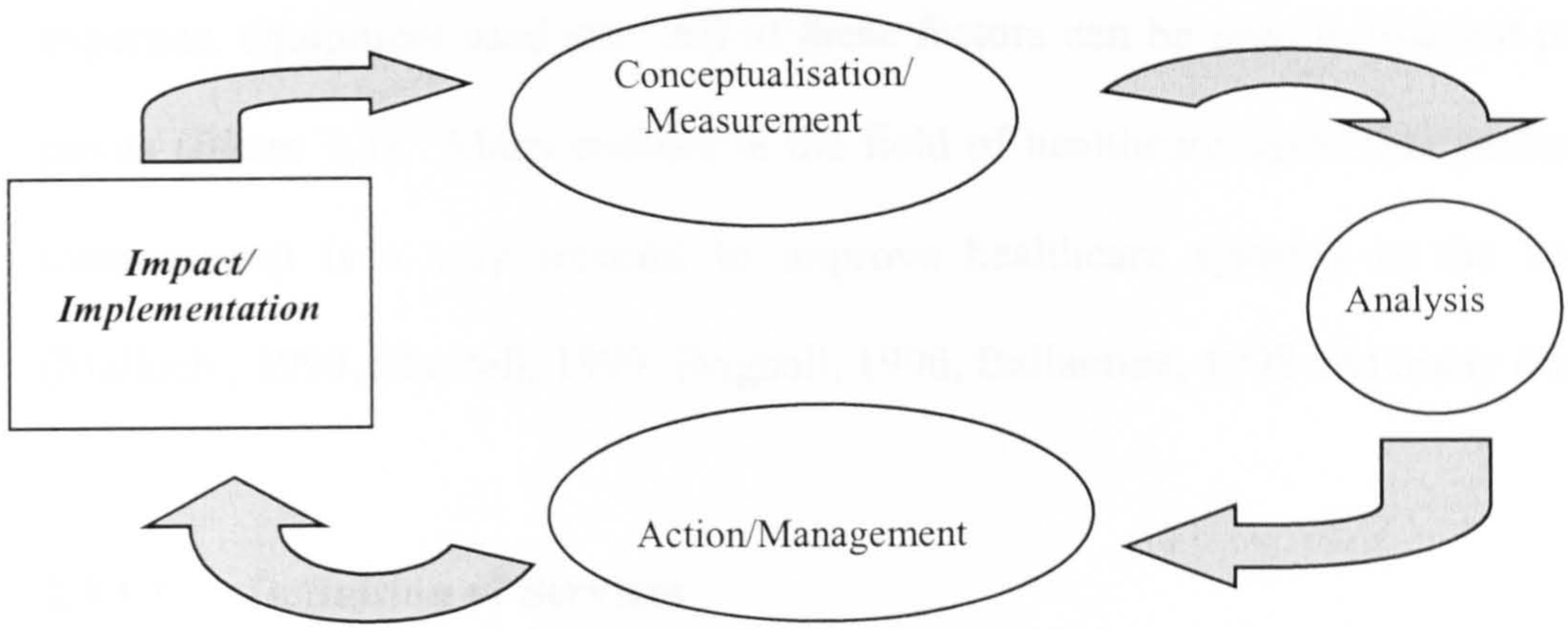
1. a performance measurement system should be a dynamic system
2. most organisations have only a static performance measurement system
3. this, in turn, has a negative effect on the integrity of the performance measurement system as well as on the agility and responsiveness of the organisation

4. the main barriers to an organisation's ability to adopt a more dynamic approach to performance measurement systems can be summarised as follows:

   - Lack of structured framework
   - Absence of flexible platform
   - Inability to quantify relationship between measures within a system.

In terms of healthcare settings, Hurst and Jee-Hughes (2000), defined performance management as the whole set of institutional and incentive arrangements by which information is (or is not) used to influence performance in the healthcare systems. These institutions arrangements encompass both centralised arrangements like that of the United Kingdom and decentralised like that of the United States.

Performance measurement is concerned with organisational outcomes and activities, and procedures that lead to consequences. Warring (2000) pointed out that the meaning of performance is dependent upon both the item for measurement and on what terms (and why) it is being measured. Furthermore, he agrees that defining performance in the context of services complicates the matter, where, "the acts of performance are simultaneously elements of outcome." Therefore, understanding performance in any organisational setting is complex and necessitates a thoughtful, tailored and explicit approach. Performance measurement concepts have been discussed extensively in the previous section.



Adapted from : Nutley and Smith (1998)

FIGURE 2.3 SCHEMATIC VIEW OF PERFORMANCE MANAGEMENT

2.3 PERFORMANCE MEASUREMENT IN HEALTHCARE SERVICES

2.3.1 Definition of Terminology

In this section the researcher defines the terms that are used in the healthcare industry. Measuring healthcare is a complex activity that has gained popularity recently. According to Evans and Lindsay (2002) it is complex to measure healthcare because of "avoidable errors (eg adverse events), under utilisation of services (care not received), overuse of services (eg inappropriate surgery eg hysterectomies) and variation in services (physicians' practices)." Waring (2000) advocates that, "it is difficult to know which aspects of the health services should be measured, let alone find the right and consistent mechanism for collecting and comparing the data across departments and hospitals." Waring implies that healthcare sectors are more difficult to manage than the commercial sectors because of multidimensional factors. These factors have a confounding effect on the health services. They include age, socio-economic status, education, morbidity, physicians'

expertise, equipment used etc. All of these factors can be seen in hospital pressure points (figure 1.3). Many authors in the field of healthcare agree that performance measurement is a way forward to improve healthcare systems in the long run (Malloch , 1999, Shortell, 1999, Brignall, 1996, Ballantine, 1998 and many others).

2.3.1.1 Definition of Services

In order to define performance measurement for services, we first must define what we mean by 'service'. In the past few decades, the service sector has become a prominent sector of the economy. Despite its contribution, businesses are still in the dark ages. This confusion has led businesses to treat the service sector as a manufacturing sector, which will eventually become untenable. Castells and Aoyama (1994), also quoted in Sampson (1999), describe the confusion of defining services as,

> *"the notion of 'services' is often considered at best ambiguous, at worst misleading (Gershuny and Miles, 1983; and Daniels, 1993). In employment statistics, it has been used as a residual notion embracing all that is not agriculture, mining, construction, utilities, or manufacturing. Thus, the category of services includes activities of all kinds, with roots in various social structures and productive systems. The only feature common to these service activities is what they are not (Castells, 1976; Stanback, 1979; Cohen and Zysman, 1987; Katz, 1988; and Daniels, 1993).*

Kelly (1997) illustrates Gross Domestic Products (GDP) attributable to services: Korea 63%, Taipei 56%, and Thailand 47%. Moreover, World Bank (1991), reported GDP for service sectors in United States: 69%, United Kingdom: 62%, Germany: 60%, Japan: 56%, and France: 67%. Despite this enormous contribution, the service sector is still ill-defined.

There is much to learn about this service paradigm especially in terms of definition, boundaries and processes in order to succeed. Modern business needs to

have a clear understanding of services that is free from traditional misconceptions of the paradigm. In order to understand services, business needs to define what is the role of services in the macroeconomic context; what is the crucial function of services to the economy and the firm; and how do we measure performance (productivity) in the service sectors. These are critical questions to help comprehend the bigger picture of services in the economy.

According to Ghobadian, Speller, and Jones (1993), the service sector encompasses a diverse and complex range of organisations. These organisations include;

- **National and local government :** for example education, health, social security, police, the military,
  transport, legal, information, and credit.
- **Non-profit private services :** for example, charities, utlities, churches, research foundations, mutual
  societies, and art foundations;
- **For-profit private services:** for example, utilities, hotels, airlines, architects, restaurants, solicitors,
  retailers, entertainment, banks, insurance companies, advertising agencies, consultancy firms, market research companies, and communications.

"The above list is not exhaustive, however, it helps to demonstrate the varied and complex nature of the service sector" (Ghobadian et al 1993). Early authors have defined services as a residual sector that cannot be accounted for. This definition is peculiar since this 'residual' sector is larger in its share of the economy than all other sectors combined. There is therefore a need to systematically define services. The 'residual' view has been propagated by governments as a classification of economic activities (Schmenner, 1995).

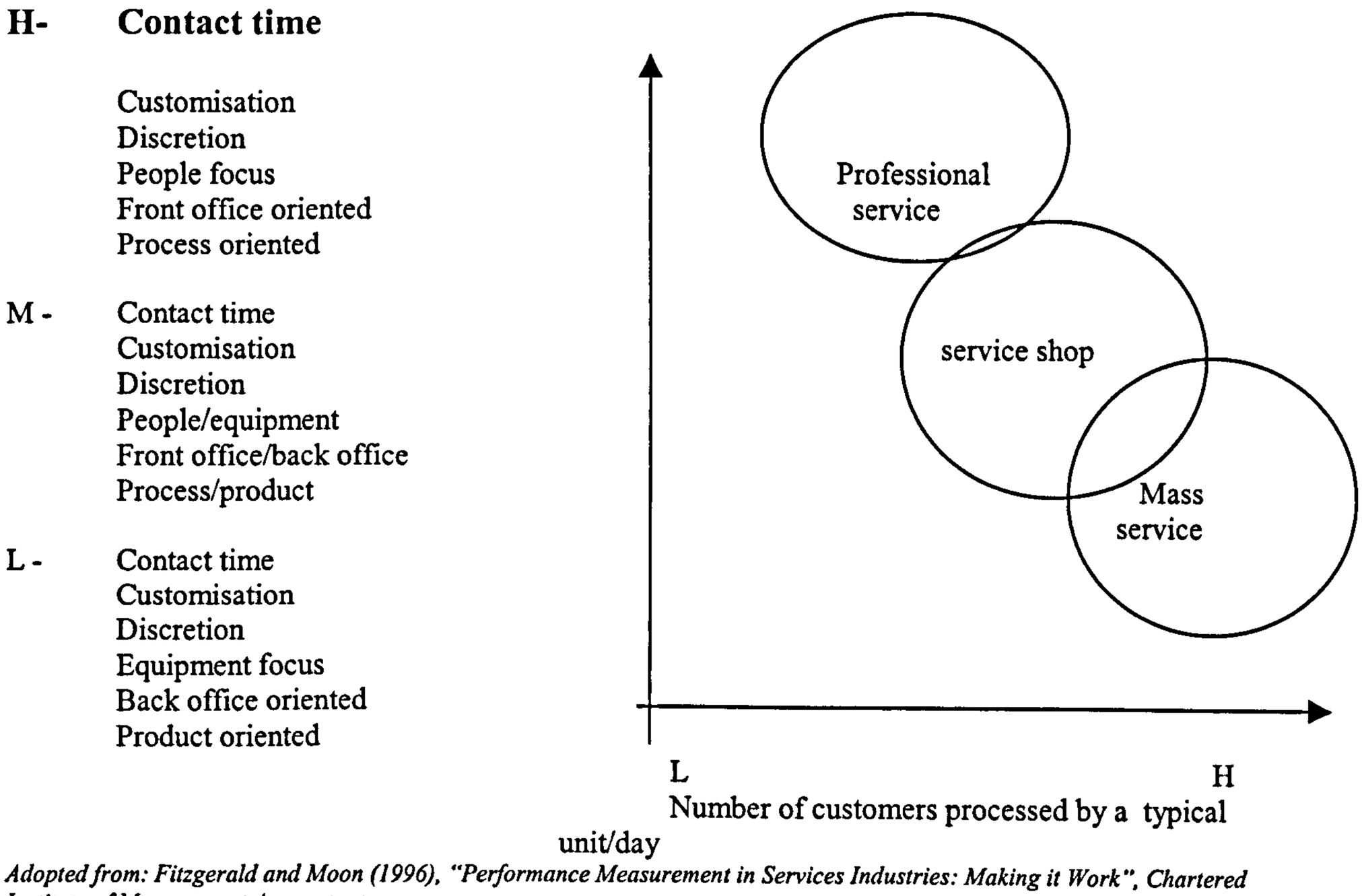
Several authors have attempted to rectify this misunderstanding of the service paradigm. Goncalves (1998) defines a service business as "one in which the perceived value of the offering to the buyer is determined more by the service rendered than the product offered". Ammer and Ammer (1984) do not define services per se but the industry in which services operate, "an industry that produces services rather than goods", (also quoted in Riddle, 1985). Ammer and Ammer's definition seems broad and does not focus on service activities in a specific industry. It provides little insight into the aspects of services themselves. As a result of this, a new definition has emerged that highlights certain characteristics of services. Murdick, Render, and Russell (1990) identify services as intangibles whereas (manufactured) goods are "tangible objects that can be created and sold or used later." Pearce (1981) says that "[services] are sometimes referred to as intangible goods; one of their characteristics being that in general they are 'consumed' at the point of production." Bannock, Baxter, and Reese (1982) extend Pearce definition: "[services] are consumer or producer goods which are mainly intangible and often consumed at the same time as they are produced .... service industries are usually labour-intensive." Pearce's definition of service incorporates Ammer and Ammer's concept of the industry (i.e. labour intensive).

Lehtinen (1985) portrays the characteristics of services as " being intangible and immaterial; produced and consumed simultaneously; and consisting of activity or process - the service is consumed as long as the activity continues." Lehtinen extends the characteristics of service as a process-driven activity. Moreover, Norman (1988) supports Lehtinen's views and thus extends the definition into intangibility: " services as intangible: they cannot be owned, stored, transported or

resold; production and consumption usually happen simultaneously and at the same location; and the customer is in direct contact with the service company, and often partakes in the service production." Norman's definition involves customer contact as part of the definition, since service delivery process focuses on customer involvement in the service production system. Lovelock (1991) stresses the importance of service as a natural process, and as such intangible in nature. He further claims that services cannot be stored, that production happens under real-time conditions, and that both customers and employees are directly involved in the production process.

All of the above definitions are theoretical, and not very practical, although comprehensive in nature. In search of a practical definition, Gronroos (1983) offers a simple but concise definition of services. He states "services are the objects of transaction offered by firms and institutions that generally offer services or that consider themselves service organisations" While Troye (1990) agrees with Gronroos, he refines Gronroos's definition by claiming that only certain production elements are services. These elements are intangible in nature: they consist of the actual interaction between service provider and service customer, while other elements also include tangible products, which are storable. Service is highly dependent on the presence of customers: "No customer, no service". Chase (1978) intoduced the idea of customer contact as part of the physical system is that present in a service. Meanwhile Henkoff (1994) and Shostack (1987) view service as a product that is a process. Bowen and Schneider (1988) agree with Chase's, Henkoff's and Shostack's definition and further comment on customer contact: "service as an intangible customer/employee interaction that comprises all or parts of

a benefit-providing transaction. As such, service cannot be stored, nor can it be fully standardised." Brown and Schneider believe customer satisfaction is a result of services rendered, and as such it must be a "benefit-providing transaction." This is a more concise and practical definition in which three essential elements are integrated together: direct interaction, no standardisation, and storability. Fitzgerald and Moon (1991) classify service into three schemes; professional service, service shop and mass service. They present these service schemes in a diagrammatic form in figure 2.4



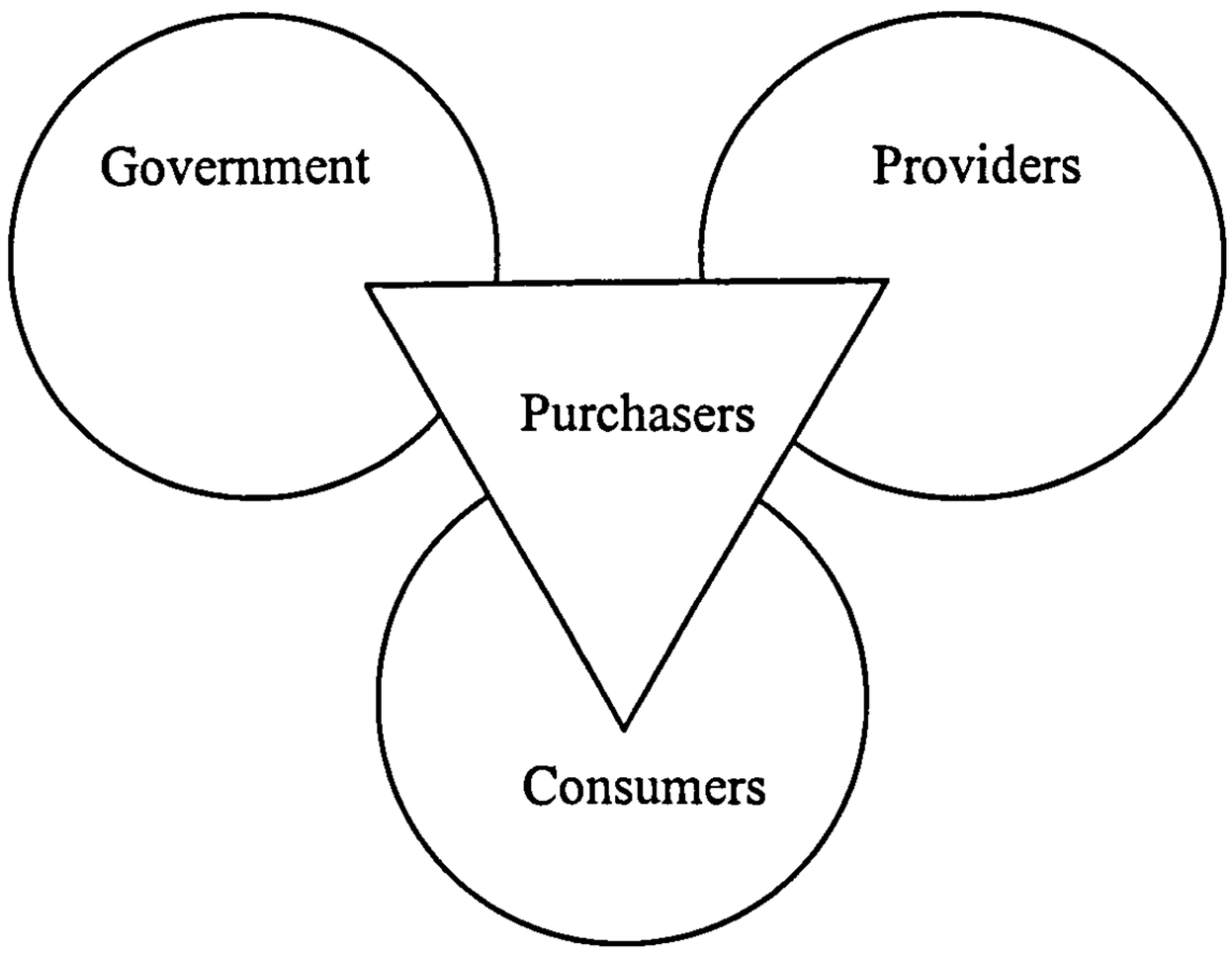
Adopted from: Fitzgerald and Moon (1996), "Performance Measurement in Services Industries: Making it Work", Chartered Institute of Management Accountants.

FIGURE 2.4 SCHEMATIC VIEW SCHEMES IN THE SERVICE SECTOR

2.3.1.2 Definition of Healthcare Services

Once services have been defined, the next section will focus on healthcare services, that is defining services in terms of healthcare settings (contextual elements

of the study). There is a great debate among scholars, academicians as well as practitioners, in healthcare management on how best to serve the population with such a diverse and dynamic practice as the medical profession. Medicine itself is not easily mastered, not to mention managing the complexity and uncertainty surrounding the issues of providing services to the general public. Drache and Sullivan (1998) state that "it makes little sense to look to universal laws of supply and demand to discipline the health market, when there is no apparent limit to the amount of service they can buy". Moreover, the paradox is taken further by Deber (1993), who asks, "What kind of market exists if no one can be priced out of it?" Figure 2.4 shows the main players in the healthcare industry. These are stakeholders that have a vested interest in the efficiency and efficacy of the health systems.



Adopted from : Marinker M (1994), "Evidence, paradox, and consensus", in Controversies in Health Care Policies: Challenges to Practice, edited by Marinker M, London: BMJ Publishing Group

FIGURE 2.5 STAKEHOLDERS' INTERACTION (LINKAGES) IN THE HEALTHCARE INDUSTRY

"Health care does not 'trade' like other goods and services" Kuttner (1997) and Evancs (1997a). Purchasers, employers, and insurers nowadays are looking for

value, that is "the best results at the lowest cost" (Nadzam and Nelson 1997). All of *them are putting pressure on the healthcare industry to measure the quality of* services rendered to the general population. This entails, the need to shape the healthcare industry to be as effective and efficient as possible.

2.3.1.3 Definition of Quality of Care

One dimension of healthcare services is in providing quality care. This section focuses on defining quality care in a health setting.

In 1980, Donabedian defined quality care as, "that kind of care which is expected to maximize an inclusive measure of patient welfare, after one has taken account of the balance of expected gains and losses that attend the process of care in all its parts." Later, the Institutes of Medicine, led by researchers, Lohr et al (1990), defined quality of care as, "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." This narrowed the definition of quality of care from patient welfare to health outcomes. The difficulty posed by multiple dimension and indicators are widely recognised (De Geyndt, 1995). As a result, the following approaches (figure 2.5) were formulated by Waring (2000) to compare approaches among healthcare researchers.

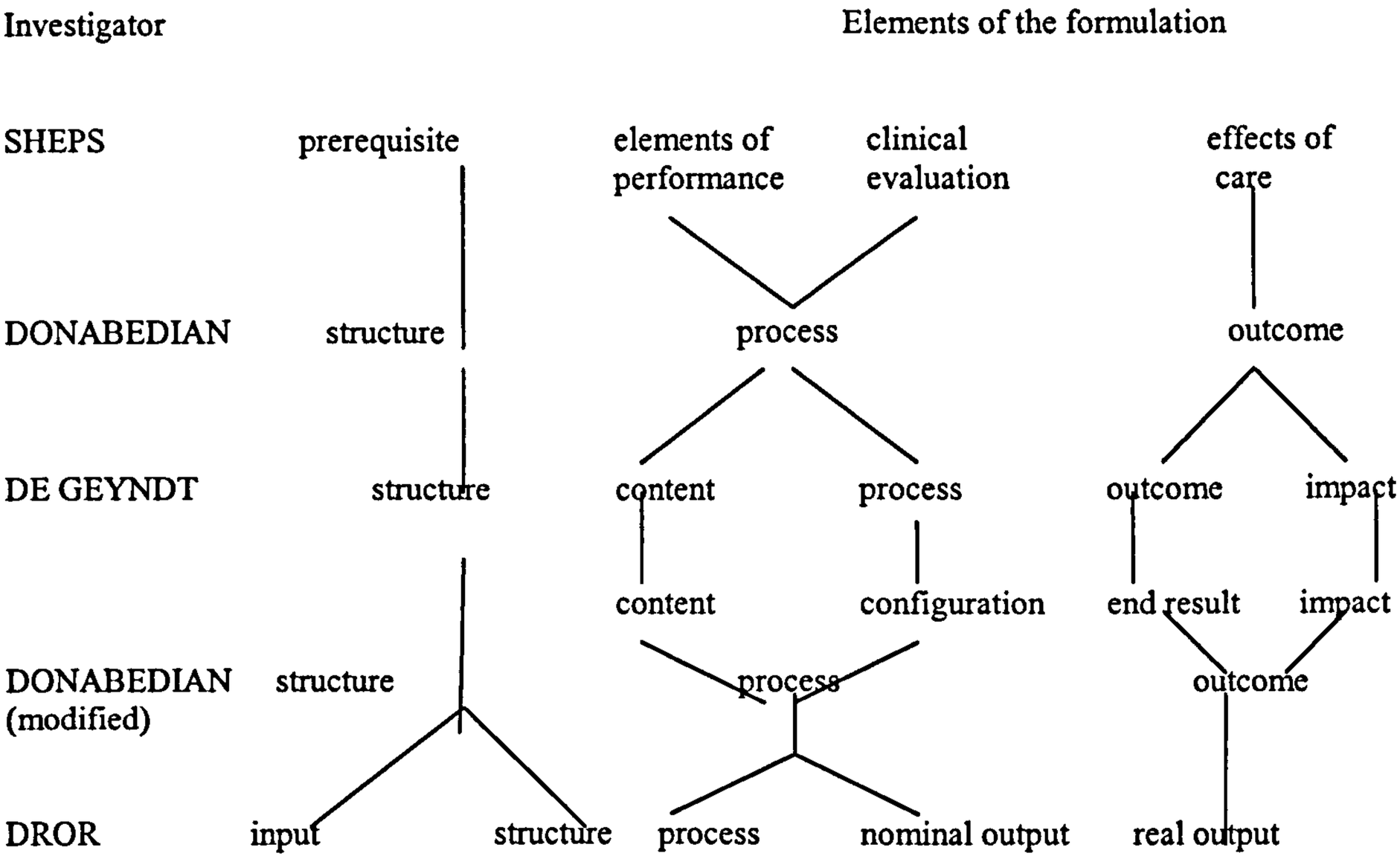
Inputs comprise all those features necessary for an organisation to function, including manpower, material, finance etc. Processes include all those activities required and completed for the task. These include service delivery, product

development etc. The outcome, the final product (ends) includes all those resultant features of the organisations.

In addition to the formulation put forward, Donabedian (1980) identified two types of outcomes that most healthcare settings possess. Outcome of healthcare has become a debated issue among health researchers, in which outcome research has now been incorporated into the processes so that performance measurement can be fully integrated. Outcomes of care can be defined in many ways. The first is technical outcome, which refers to the application of technical skills and resources. For the hospital concerned this means the manner in which the medical services are rendered to the patient and the clinical outcomes. The second is psychosocial outcome, which refers to the experiences of the patient, carer and provider. Maxwell (1992) has identified six dimensions of healthcare. These include:

1. effectiveness of care (is it provided in the most appropriate way?)
2. the acceptability of care (what does the patient think?)
3. efficiency of care (is output maximised for a given input?)
4. access to care (is treatment received when it is needed ?)
5. the equity of care (are all groups treated fairly)
6. the relevance of care (is the overall pattern of service adequate?).

Brignall and Ballantine (1996) adds more dimensions to the above, such as reliability, responsiveness, appearance, cleanliness, comfort, friendliness, competency, access, availability and security, to gain a comprehensive insight into measurement systems.



Source: Donabedian, A (1980), The Definition of Quality and Approaches to Its Assessment, AnnArbor: Health Administration Press.

FIGURE 2.6 ALTERNATIVE FORMULATION OF APPROACHES TO QUALITY ASSESSMENT & THEIR INTERRELATIONSHIPS

According to Donabedian, the appraisal of hospital quality can be divided into four parts:

- examination of prerequisites for adequate care
- indexes of elements of performance
- indexes of effects of care
- qualitative clinical evaluation.

These four elements are highlighted in figure 2.6, which was rearranged by Donabedian into three elements which he called "Structure-Process-Outcome".

2.3.2 Health Care Reform

The literature on healthcare would not be complete without discussing healthcare reform. Unlike other industries, healthcare has evolved to incorporate changes to the way medicine is being practised, eg new technology, emerging infectious diseases, new and innovative ways of financing healthcare and many others. As a result of reform, no countries in the world have the same healthcare provision. Comparative studies by the World Health Organisation (WHO) are discussed in Chapter Three of the thesis. Healthcare systems differ from country to country, and understanding the underlying reason for the development of the health system will help managers to perform better, especially in a developing country like Malaysia. Learning the strengths and weaknesses of the systems of other countries aids the development of an effective system.

"Virtually all the OECD countries face the same problems and have common objectives concerning health care, particularly the provision of quality care at an affordable cost" (OECD 1994). Table 2.1 illustrates reform in the healthcare sector.

How must the healthcare system be structured in order to maximise population health in a cost-effective manner? This question addresses the growing concern of countries to move their healthcare system forward. There are many attributes that can be identified as necessary for measurement. These attributes are the purpose of measure; the entity whose quality is being measured; dimension of quality being measured; the type of measure; and who uses the measure. (Eddy, 1998). Many authors agree with Eddy's view, which is agreed to be comprehensive in nature (Shortell, 1999, Abernathy,1997 etc).

TABLE 2.1 HEALTHCARE REFORM

From	To
• health care policy	healthy public policy
• equality of access to medical care	achieve equity to access to health
• health as an absence of disease	health as a resource for living
• focus on treatment and cure	focus on health promotion and disease prevention
• provider driven	consumer driven
• institution-based care	community-based care
• centralised decision making	decentralised decision making and regionalisation
• series of independent institutions	horizontal and vertical integrated delivery system
• utilisation driven	needs-based health services
• expert driven	evidence-based practice

Source: Barker, C (1996), *The Health Care Policy Process*, London: Sage

To measure healthcare in today's environment is paramount, especially in essential services like hospitals, ambulatory care, nursing homes, acute care etc. Eddy (1998) states that the importance of performance measurement can be profound, in that it informs people of the outcomes expected, it is the basis of planned efforts to improve care, and it drives healthcare resources in a specific direction.

"The net effect of all these problems is that today's measures tend to be blunt, expensive, incomplete and distorting" (Eddy, 1998). He also stresses that "an absolutely terrible measure will still produce results, which to all intents and purpose will look just as authentic as the result produced by an accurate measure".

Cost has always been important on the health reform agenda. Many countries have implemented a cost containment strategy on their health systems to justify the use of resources to manage change processes. Patient-based assessments (PBA) are used as a basis to understand cost behaviour. PBAs are used by many organisation such as Professional Standard Review Organisation (PSROs), Professional Review

Organisation (PROs) and other accredited agencies in America. Example of PBAs are:

- functional status and well-being (generic health status measures)
- specific symptoms assessment (disease-specific measures)
- primary care measures (access, continuity, comprehensiveness, coordination, accountability and trust)
- measures of patient satisfaction
- biologic indicators of disease progress
- costs.

2.3.3 Perspectives in Healthcare Services

The terminology described above provides the foundation in defining aspects of healthcare that are crucial in understanding health. This section lays out the groundwork on which the foundation is built. The groundwork is macro- and micro-perspectives of health, healthcare systems and CARE pathways. This is pertinent because it encompasses elements in the healthcare context. Understanding these elements helps the construction of healthcare services.

2.3.3.1 Macro and Micro Perspectives

Healthcare costs exceeded 14% of the Gross Domestic Product in 1996 in the United States. Per capita expenditure increased from $202 in 1965 to $3,150 in 1995

(Health Care Financing Administration 1996). The purchasers, insurers, employers, and government, local and federal, are all concerned with the rising of healthcare costs and the decline of the quality of care. "With the cost reduction as a driving force, health care in the 1990s is moving into a new and a very different setting - that of the free market" (Popovich, 1998).

According to Simmons (1998), health care costs continue to rise at twice the rate of inflation. Moreover Malloch (1999) states that the United States spends twice as much per capita as any other nation and yet achieves no better health outcomes. "All other developed nations provide necessary health care services at about one half the cost of the United States, and their people are as healthy, or healthier than those of the United States and are far more satisfied with their system of care." (Malloch, 1999). How do you measure healthcare in different settings? There are so many adverse effects of measurement that it makes healthcare a special research topic.

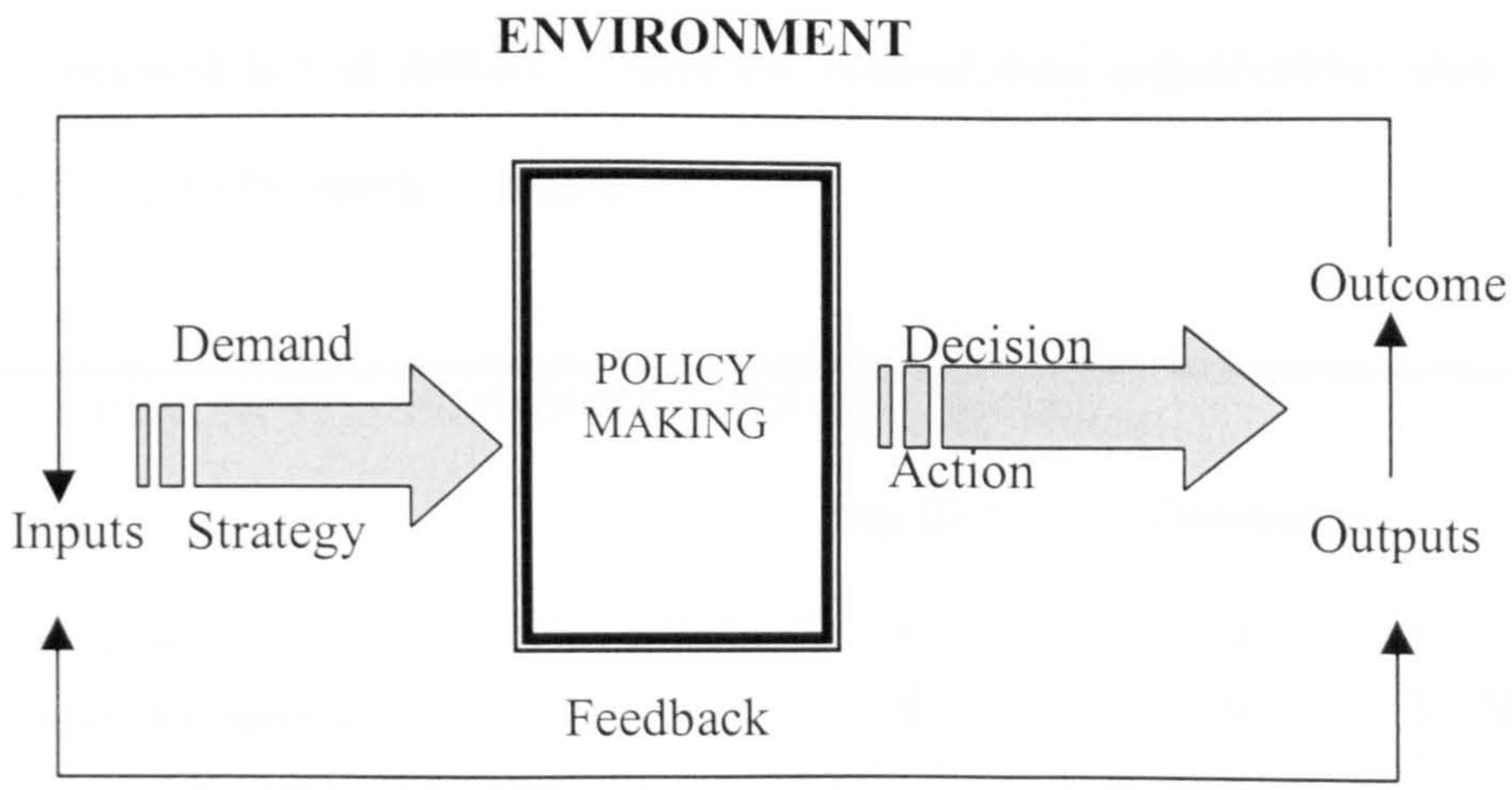
> "The incredible amount of data, complex and continuing regulatory changes, and most importantly, the erosion of public confidence in health care, require significant action" (Malloch, 1999).

Giving medical care is a totally different matter from venturing into a new business. In the world of business, delivering a product or service is an organisational outcome that provides the means for achieving desired profitable ends. However, the reverse is true for healthcare. The hospital produces healthy people as an end in itself, while financial and other organisational performance aspects provide the means. Therefore, it is sufficient to say that the question is one of determining the appropriate means and end (Waring 2000).

Marinker (1994) states that provision of medical care "stemmed not from an examination of the facts, but from opinion and political will" and he also suggests

that "scepticism in the face of facts is an essential safeguard". Harris (1994) states that "patient satisfaction measures have long been held to be reliable in terms of social acceptability of service, but unreliable in terms of clinical effectiveness and efficiency". However, there are study shown that validity of patient satisfaction measures as a measure of quality care (Vuori, 1994 and Baker, 1994).

When it comes to preserving health, consumers do not limit to the amount that they can pay. There is no price tag attached to the value of a healthy individual. The healthcare industry differs in a lot of respects from other industries. It is not driven by demand for the service but by the need of the patient (consumer). Therefore, most purchasers consume service not at the point of the provision but upon acquiring medical treatment. Patients, while being the prime consumers of the service, are the most vulnerable subjects. Therefore, information from the providers is crucial in determining service quality.



Adapted from: Barker (1996), Health care policy process, London: Sage

FIGURE 2.7 SYSTEM DIAGRAM FOR POLICY MAKING

2.3.3.2 Healthcare Systems

The definition of hospital according to the Oxford Advanced Dictionary, is "a place where people are treated for, or nursed through, their illness or injuries". To elaborate further the lexicographer's definition, the Joint Commission of Accreditation of Health Care Organization (JCAHO or Joint Commission) defined hospital in its manual (1998) as:

> **"A health care organisation that has a governing body, an organised medical staff and professional staff, and inpatient facilities and provides medical, nursing, and related services for ill and injured patients 24 hours per day, seven days per week".**

There is no consensus achieved as to what constitutes performance in healthcare systems. Authors in the field of healthcare do not agree about the definition of performance. This is not surprising, as it has been discussed extensively in the previous section. The World Health Organisation (WHO) and Organisation for Economic Co-operation and Development (OECD) framework shown in table2.2 will be discussed in this section. These are international organisations that look into the well-being of the world's countries.

TABLE 2.2 HEALTH SYSTEM PERFORMANCE FRAMEWORK

Goals	Avg level	Distribution	
Health improvement	√	√	**WHO**
Responsiveness to expectations	√	√	
Fainess in financial contribution		√	
Health improvement/outcome	√	√	**OECD**
Responsiveness & access	√	√	
Financial contribution/health expenditure	√	√	
	Efficiency	Equity	

Adopted from: Murray CJ and Frenk J (2000)

The OECD maintains the integrity of the framework but with a few modifications to it. These modifications are intended to encompass more global health issues. For example 'access' is a component of responsiveness, which mainly allows questions of equity of access to healthcare to be addressed. Health expenditure is added to the framework so that the issue of desirable health spending can also be addressed. This has been termed by OECD 'macroeconomic efficiency'. The following are comparative healths system implemented across the globe. Table 2.3 shows a different framework using different domains to reflect the performance of individual health systems. These frameworks served as a benchmark for many other developing countries in considering their health system. These international frameworks have been well received in the international healthcare community.

TABLE 2.3 COMPARISON OF CONCEPTS OF HEALTH SYSTEMS PERFORMANCE

Domain/subcategories of Health system performance	OECD framework	WHO framework	Australian framework	NHS framework	JCAHO framework
Health improvement/outcomes	X	X	X	X	X
Appropriateness			X	X	X
Capacity/competence				X	
Safety				X	X
Responsiveness	X	X			
Patient satisfaction					
Patient experience			X	X	X
Acceptability			X		
Accessibility			X	X	X
Continuity			X		X
Equity	X	X			
Health outcomes	X	X			
Access		X	X	X	X
Finance	X	X			
Efficiency		X	X		
Macroeconomic	X				
Microeconomic	X	X			
Unit cost etc			X	X	X

Adopted from:: Waring, J (2000), "Towards An Integrated Organisational Frameworkof Hospital Performance", Aston Centre for Health Services Organisation Research Working paper, July, No RP0018, ISBN 1-85449-535-6.

Measures can be classified into three forms: structural measures (innate characteristics of physicians, nurses, the systems), process measures (what health professionals do to the people in the systems) and outcome measures (what happens to the people in the systems, particularly relating to their health) (Donabedian, 1980).

The following are a set of national domains according to countries' healthcare framework. There are many frameworks based on these three developed countries, namely Australia, United Kingdom and United States. Table 2.4 shows the indicators of three countries; namely Australia, United Kingdom and United States.

TABLE 2.4 PERFORMANCE FRAMEWORK COMPARISON

Indicators set	New South Wales framework (Australia 1999)	National Health Services (UK 1998)	JointCommission (USA 1999)
Domains	Safety	Health outcomes	Appropriateness
	Effectiveness Appropriateness	Health improvement	Availability
	Consumer participation	Effective delivery of care	Continuity
	Access	Efficiency in operations	Effectiveness
		Patient/carer experience	Prevention/early detection
	Cross dimensional		Respect & Caring
			Safety
			Timeliness

Adopted from: Joint Commission on Accreditation of Healthcare Organisation, National Library of Healthcare indicators.

Based on the formulation outline above, Waring (2000) proposed a schematic diagram of the hospital. This will be a fundamental framework that helps managers to understand the basic elements of hospital performance. It portrays the interrelationship between organisational features of a hospital setting.

2.3.3.3 CARE Pathways

Pathways are popular guidelines used in the United Kingdom, where the National Pathway Association was formed, dedicated to developing comprehensive and effective pathways. It is a multifaceted tool (Luc 2000), comprising many elements that support the process-based approach. Currently, there is no standard definition of care pathways available in the UK. The National Pathway Association (NPA 1998) defines pathways as:

> **"An integrated care pathway determines locally agreed, multidisciplinary practice based on guidelines and evidence where available, for a specific patient/client group. It forms all or part of the clinical record, documents the care given and facilitates the evaluation of outcomes for continuous quality improvement."**

According to Johnson (1997), pathways are viewed as a generic term to cover a multitude of different applications. Luc (2000) lists alternative terms used for care pathways such as:

critical pathway	*care profile*
anticipated recovery pathway	*care protocol*
clinical pathway	*collaborative care plan*
care tracks	*case management (micro level)*
integrated care pathway	*patient pathways*
critical care method	*collaborative care track*
care map	*expected recovery pathway*
clinical algorithm	*multidisciplinary pathways of care (MPC)*

According to Nelson (1995), the decision to develop care pathways should be based on high volume, high cost, high variability and high risk. These quality standards are in place to ensure patient satisfaction. The benefits of pathways are outlined as the following (Luc 2000):

1. improving patient outcomes
2. reducing clinical complications
3. increasing patient satisfaction
4. increasing communication
5. reducing time spent by staff documenting care
6. reducing patient uncertainty
7. eliminating variations
8. improving resource allocation
9. providing a method of continuous quality improvement
10. assisting in clinical audit
11. managing risk
12. implementing evidence-based guidelines and standardising care
13. tool to introduce clinical governance framework
14. control cost and reduce length of stay as part of a managed care system

2.4 PERFORMANCE MEASUREMENT FRAMEWORK

It is imperative to understand what it means for a hospital to perform (figure 2.8). This means it is necessary to take account of the realities and context of specific organisational activity. Once this is accomplished it is then possible to develop a holistic appreciation of its consequences. This section is intended to develop a generalist model (generic-based) of organisational elements implicit in hospital performance.

It is hoped that with a proper measurement system, management will find that any strategy derived from it will be objective and purposeful. All efforts are directed towards a more healthy society as a whole. All of these frameworks in this section feature unique properties of performance measurement and this will be elaborated

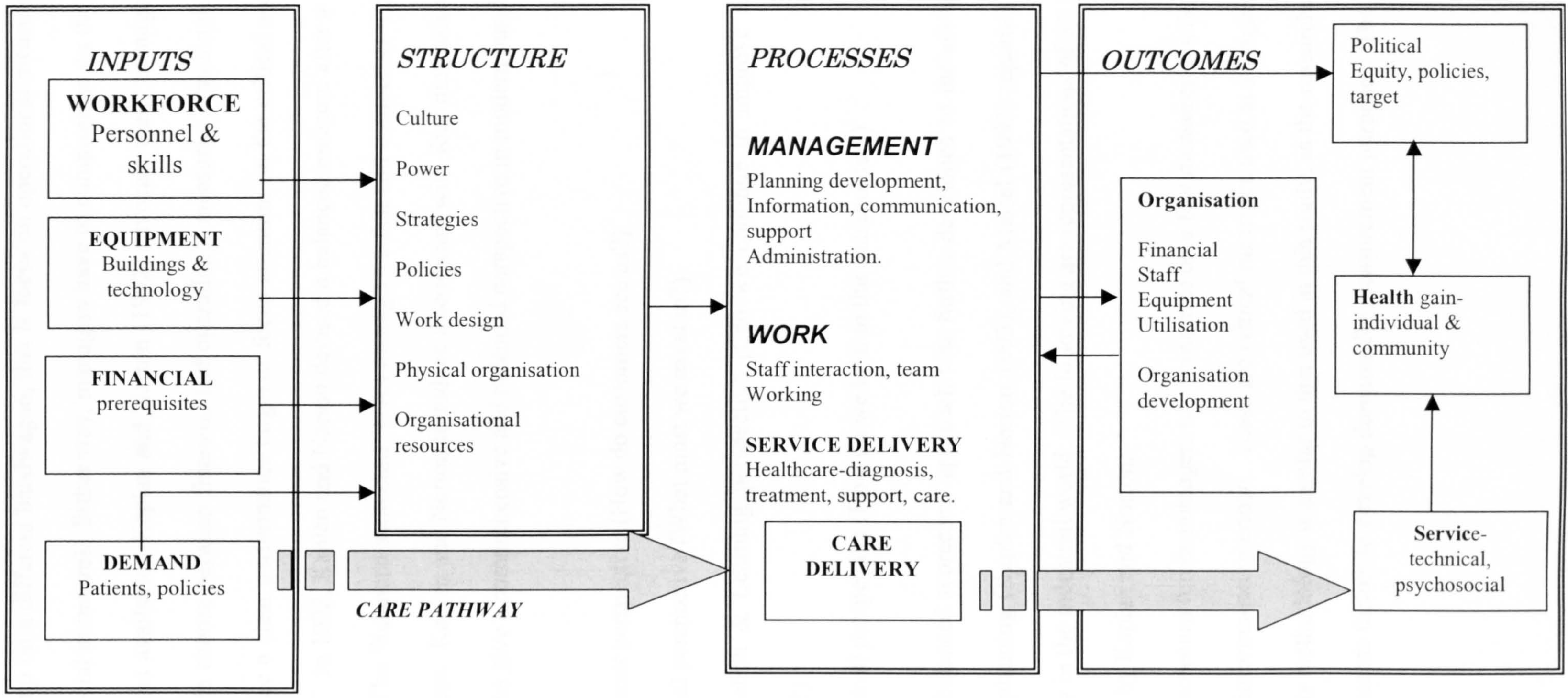
individually in the next section. This section is intended to explain performance measurement in general, not as something specific to healthcare settings. The healthcare frameworks will be explained in section 2.4.2.

2.4.1 Performance Measurement Framework in General

2.4.1.1 Balanced Scorecard

Many performance measurement frameworks were developed in the eighties. Undoubtedly one of the most widely recognised performance measurement frameworks of today is the balanced scorecard. According to Amaratunga et al (2001) 50% of 1,400 global businesses surveyed apply 'some kind' of BSC approach. In order to manage processes, managers need an understanding of a system that has an impact on the business. Traditional financial accounting measures such as return-on-investment and earnings per share give misleading signals for continuous improvement and innovation efforts. These are measures that were popular (Return On Investment [ROI] and Earning Per Share [EPS]) in the industrial era. However, in today's competitive environment, managers need more than these 'lagging indicators', so-called by Fitzgerald and Moon. The complexities of managing organisations today require that mangers be able to view performance in several areas simultaneously. As a result of this, academics and practitioners have sought better ways to remedy these deficiencies in managing businesses. Some find

FIGURE 2.8 BASIC ORGANISATIONAL MODEL FOR A HOSPITAL



Adopted from: Waring, J (2000), "Towards an integrated organizational framework of hospital performance", Aston University White paper.

relevant and better financial measure to compensate for the weak measures, while others jump on a different bandwagon, that is focus on operational measures (that is non-financial in nature). Either way, managers have to compromise on the selection of measures available. Kaplan and Norton (1992) advocate that, "managers should not have to choose between financial and operational measures....no single measure can provide a clear performance target or focus attention on the critical areas of the business." In 1992, Kaplan and Norton devised a balanced measure after a year long project. The 'balanced scorecard' gives managers a fast and comprehensive view of the business. Kaplan and Norton introduce a scorecard with four dimensions. These dimensions give a comprehensive and balanced perspective in modern business.

1. Customer perspective (How do customers see us?)
2. Internal perspective (What must we excel in?)
3. Innovation & Learning perspective (Can we continue to improve and create value?)
4. Financial perspective (How do we look to the shareholder?)

The 'balanced scorecard' approach was further developed to include aspects of strategic planning (Kaplan and Norton 1993), and Maisel (1993) reported its rising popularity in the industrial world. The following are representations of the scorecard proposed by Kaplan and Norton.

The scorecard forces managers to concentrate on a few measures at a time, thus reducing information overload. These are critical measures used at a single point of time. This methodology is similar to that used in this study, as the researcher used critical success factors to develop domains for measurement purposes. The

weakness, according to Booth (1997), is that "the model does not explicitly link the 'what's' and 'how's' of performance in a specific organizational framework that facilitates organizational feedback and feedforward information."

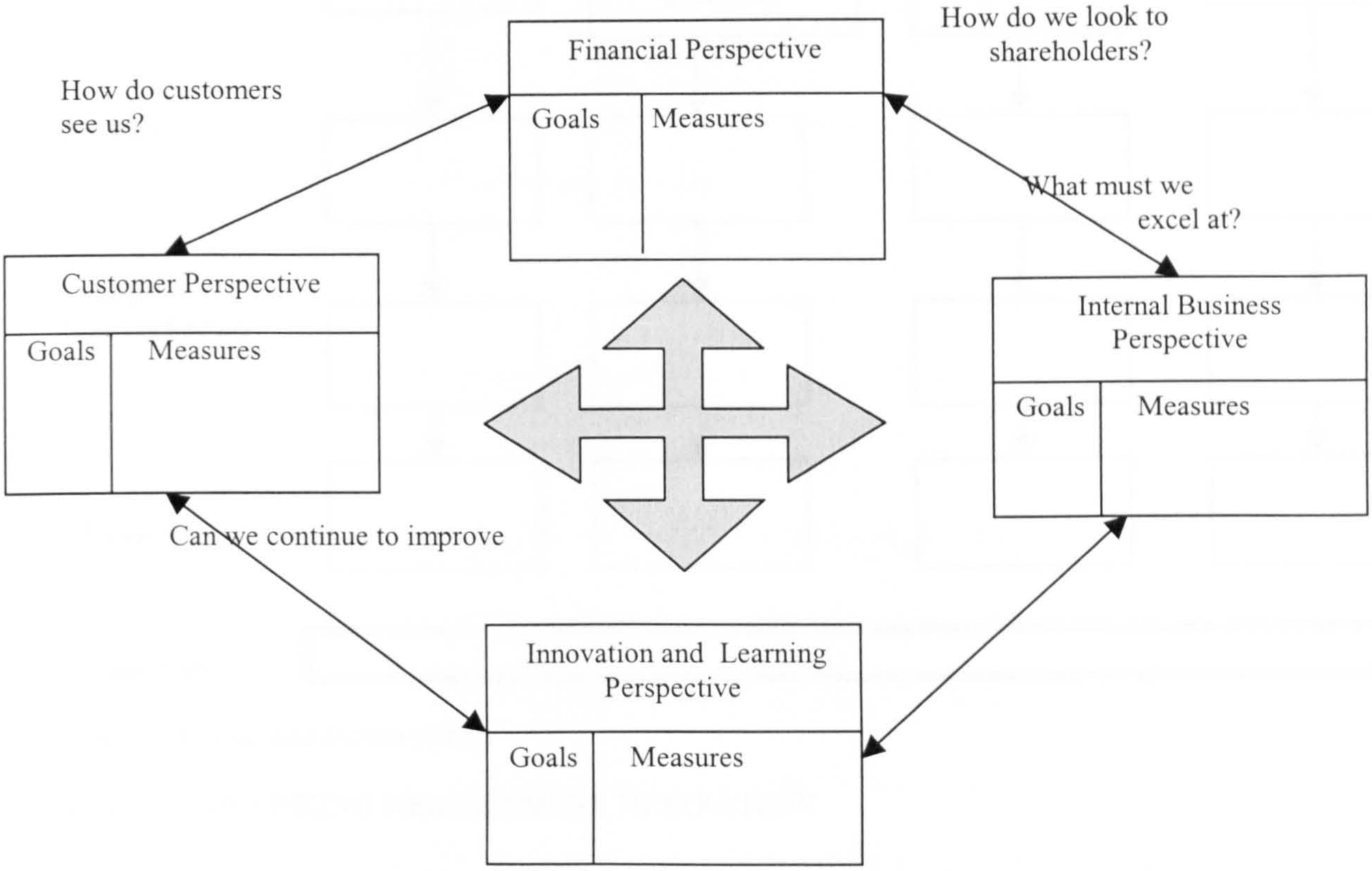
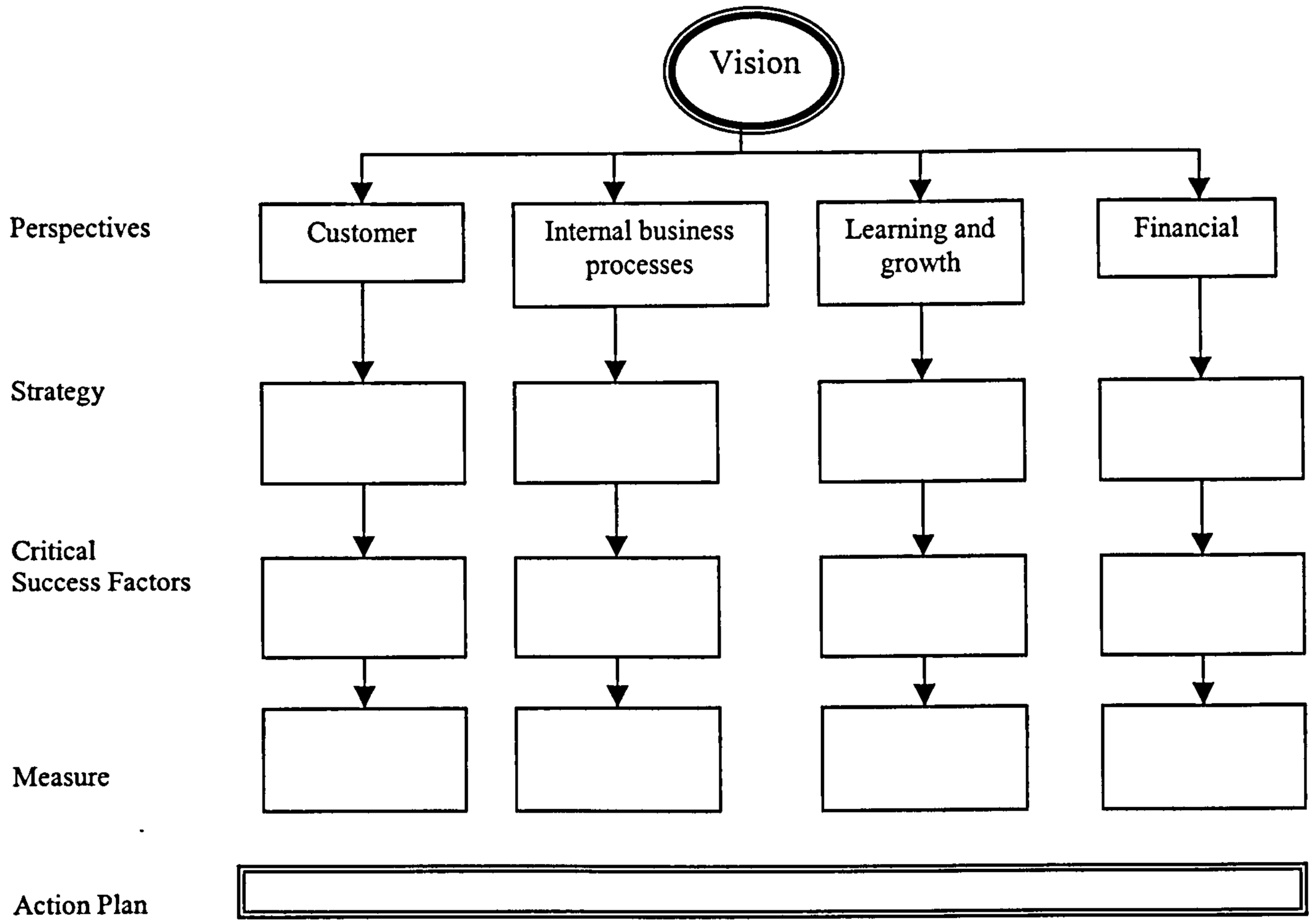


FIGURE 2.9 THE BALANCE SCORECARD LINKS PERFORMANCE MEASURES

Figure 2.10 shows the mechanics of the 'scorecard at work'. It links from organisational perspective to strategy and critical success factors which in turn align to measure and translate into action.



Source: Kaplan and Norton (1993)

FIGURE 2.10 LINKING MEASUREMENT TO STRATEGY

2.4.1.2 Keegan Measurement Matrix

Another performance framework is proposed by Keegan et al (1989). Keegan et al developed a matrix formed of performance measurement, which basically seeks to integrate different classes of business performance, financial and non-financial, internal and external. One weakness of this framework is that it makes no explicit links between different dimensions of business performance as compared to the balanced scorecard.

	Non-cost	Cost
External	no of repeat buyers no of customer complaint	competitive cost postion relative R&D expenditure
Internal	design cycle time % on-time delivery no of new products	design cost material cost manufacturing cost

FIGURE 2.11 KEEGAN MEASUREMENT MATRIX

2.4.1.3 Results and Determinants Framework

An alternative framework to Keegan's matrix is a Results and Determinants Framework (RDF) developed by Fitzgerald et al (1991). This framework categorises performance into two groups: results (competitiveness, financial performance), and determinants, that focus on determinants of results (quality, flexibility, resource utilisation and innovation). This model provides both feedback and feedforward in the analysis of organisational performance for the service industry. The complexity of the RDF model reflects its origins in the service sector, where it is typically difficult to clearly differentiate between organisational outcomes and process (Waring 2000). Fitzgerald et al (1991) pointed out that results are 'lagging' indicators since results obtained are the function of past performance while determinants are 'leading' indicators because of their predictive nature. These terms for indicators have gained wide recognition in the performance measurement field. The following is a schematic view of the framework:

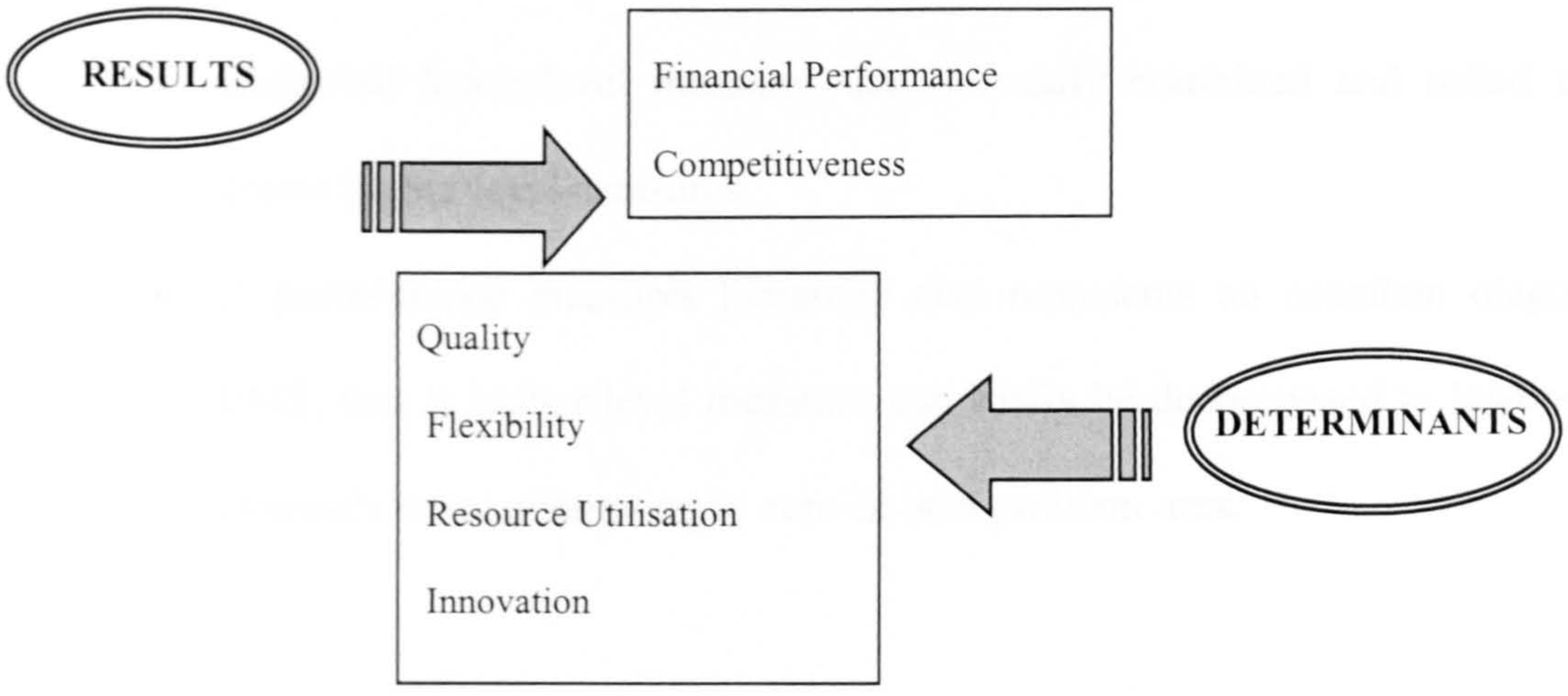


Figure 2.12 RESULTS AND DETERMINANTS FRAMEWORK

2.4.1.4 Performance Pyramid

In 1991, Lynch and Cross developed a performance pyramid framework, whose strength is its view of the business process in a hierarchical format. This framework makes explicit the difference between measures that are of interest to external parties, such as customer satisfaction, quality and delivery, and internal organisation such as productivity, cycle time and waste. This framework has popularised a hierarchy of measures in modern organisation. These families of measures are agreed by many authors in the field (Thor 1993, Brown 1996, Kaydos 1991 etc). Harbour (1997) pointed out that a hierarchy of measures has many advantages. They are:

- Providing specific and relevant performance-related information to different levels within an organisation so that the right people can move easily, and access the right level of information at the right time.

- Collected lower-level measures can be easily combined and rolled up to create higher level measures.
- A performance measures hierarchy also represents an excellent diagnostic PMS, that is higher-level measures can easily be decomposed to lower-level elements when attempting to zero-in on a problem area.

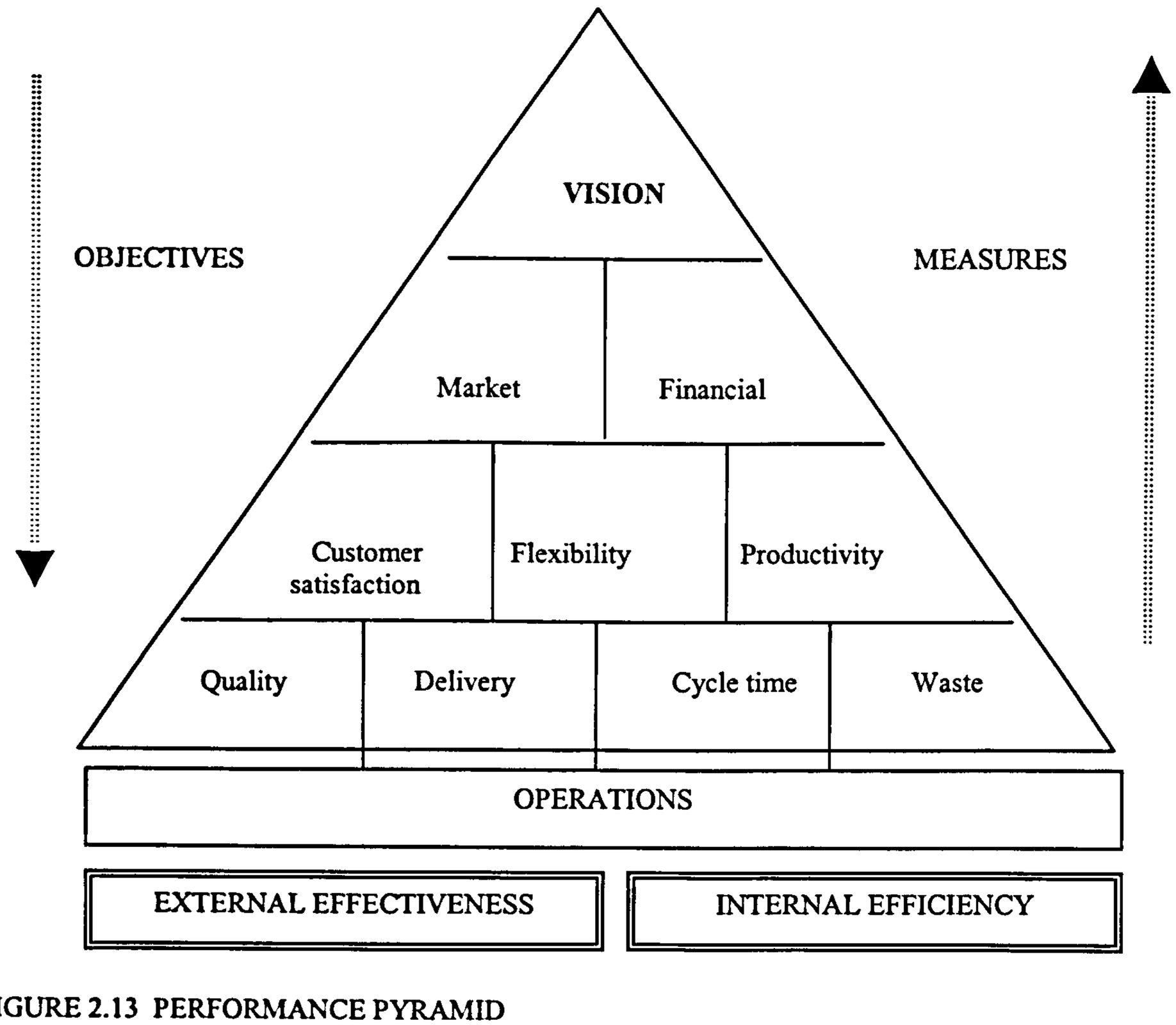
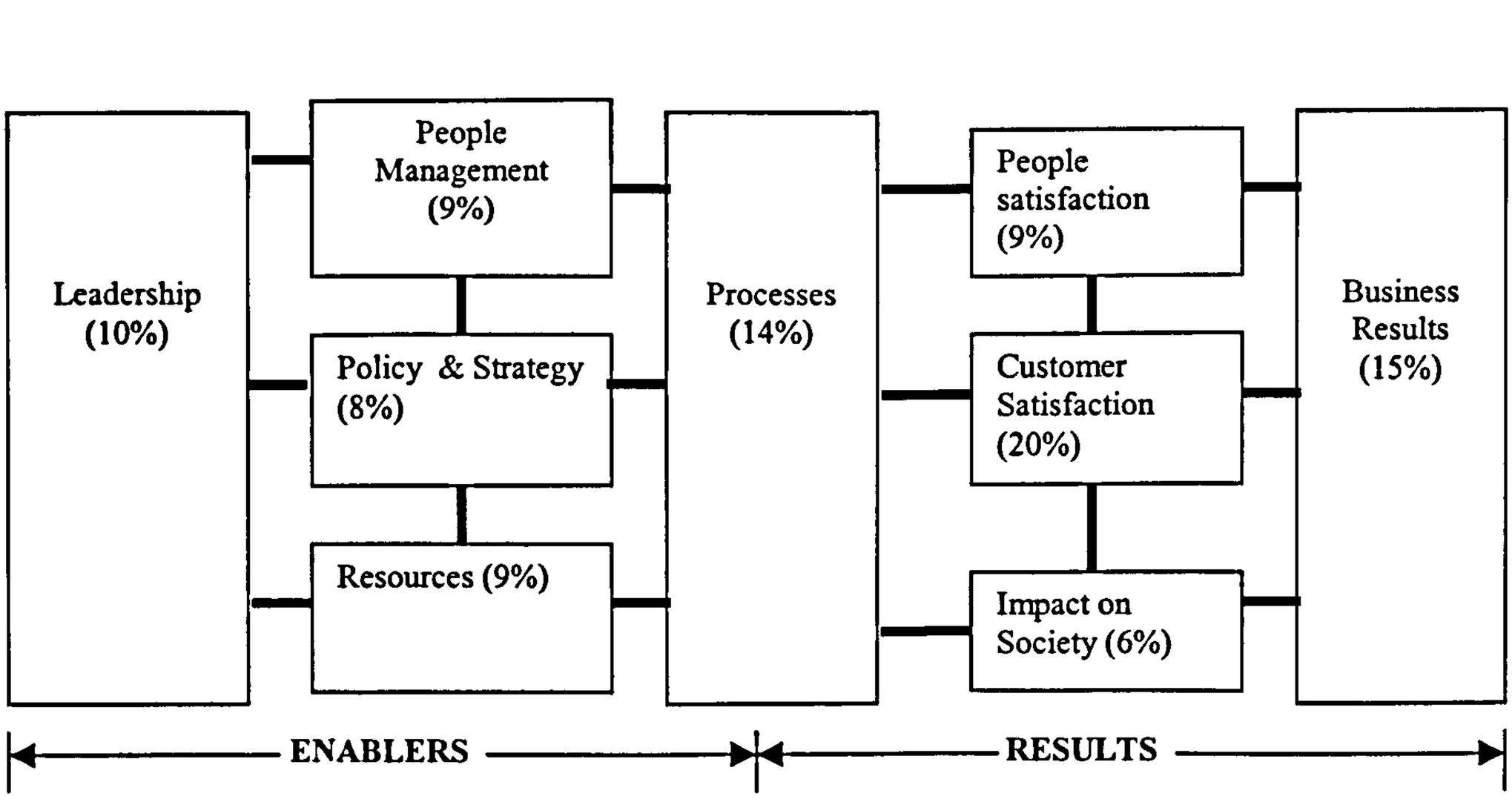


FIGURE 2.13 PERFORMANCE PYRAMID

2.4.1.5 Business Excellence Model

There is another widely known measurement framework, developed by the European Foundation for Quality Management (EFQM). This framework is known as 'Business Excellence Model'. It was incorporated in September 1988 by fourteen leading European corporations. This framework consists of two subsets of performance factors, broadly classified as enablers and results. The framework proposed that enablers are the levers for management to act on to get the desired results. The objective of EFQM is to enhance the position of European industry and commerce, "by strengthening the strategic role of quality in corporations" (Ghobadian and Hong 1996). According to Neely et al (2000) it is difficult to operationalise.



European Foundation for Quality Management (1992), Total Quality Management: The European Model for Self-Appraisal 1992, Eidhoven, The Netherlands, European Foundation for Quality Management, ISBN 90-5236-035-9.

FIGURE 2.14 EUROPEAN QUALITY FRAMEWORK (EFQM)

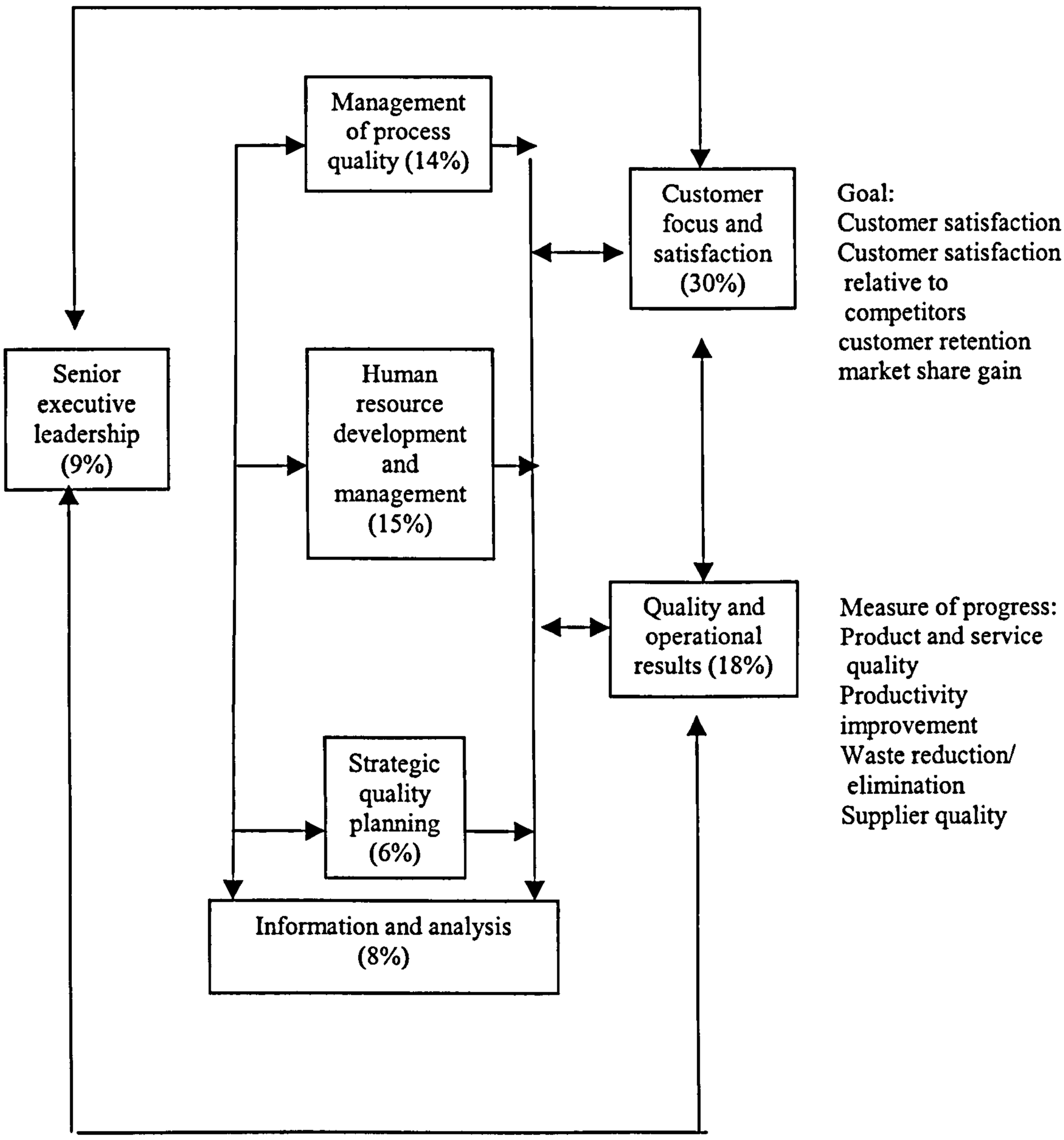
2.4.1.6 Malcolm Baldridge National Quality Award

Incorporated in 1987 by the US Congress, the Malcolm Baldridge National Quality Award, has four basic elements: driver, system, measures of progress, and goals. The Baldridge has two main assumptions: the first is that top management is the primary driver of the business; and the second is that the basic goal of "quality process is the delivery of ever improving quality and value to customers." The framework is like an audit walkthrough.

According to Ghobadian and Hong (1996), there are common areas that can be discerned from the international quality awards. These categories include:

- formulation of quality policies - these should be formulated in terms of meaning goals and objectives and aimed towards gaining customer satisfaction
- assigning responsibility for quality to the top management (management is expected to display quality behaviour openly through regular communication, acting as role models, assisting in provision of training and visits to vendors and customers)
- constant improvement in the level of understanding of the quality policies within and without the organisation
- managing quality procedures and control
- reviewing the progress of the improvement process
- delegation of authority, recognition of quality behaviour, and empowerment of the workforce.

The self-assessment exercise of this quality award brought about benefits for the study in terms of providing universal framework for evaluation. According to Ghobadian and Hong (1996), areas of benefits are, "aspects of management practice; quality methods; techniques, tools and procedures; deployment of quality plans; and results attained." Figure 2.15 provides a schematic view of the Baldridge Quality Award.

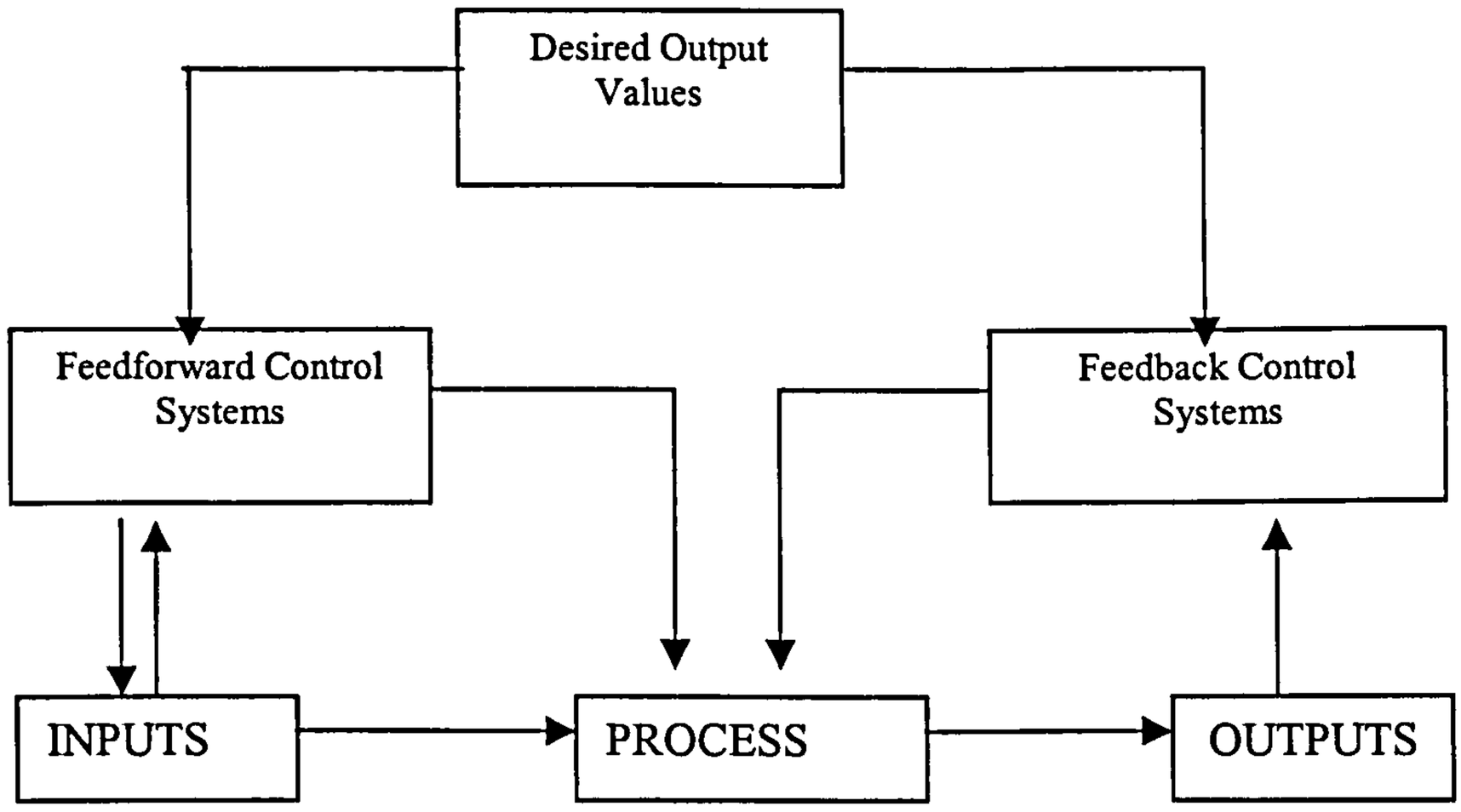


Source: Ghobadian and Hong (1996), "Characteristics, Benefits and Shortcongs of Four Major Quality Awards", International Journal of Quality and Reliability Management, vol 13(2), pp 10-44.

FIGURE 2.15 BALDRIDGE QUALITY AWARD

2.4.1.7 Feedforward : Feedback Control Model

Fitzgerald et al (1991) proposed yet another performance measurement framework, called Feedforward: Feedback control model. This model is popular in the marketing literature where marketers found it useful to control product information flow to and from the market (external environment). It is used in the service industries. The key concept in the model is the feedforward control mechanism that is used for planning and objective settings and feedback control mechanism that is used to measure performance against target. Performance measurement is a key factor in ensuring the successful implementation of an organisation's strategy (Fitzgerald et al 1993).



Adpated from: Tadepalli, R (1992), "marketing Control: Reconceptualising and Implementation using feedforward method", European Journal of Marketing , vol 26(1), pp 24-40.

FIGURE 2.16 COMPARISON OF FEEDFORWARD AND FEEDBACK CONTROL SYSTEMS

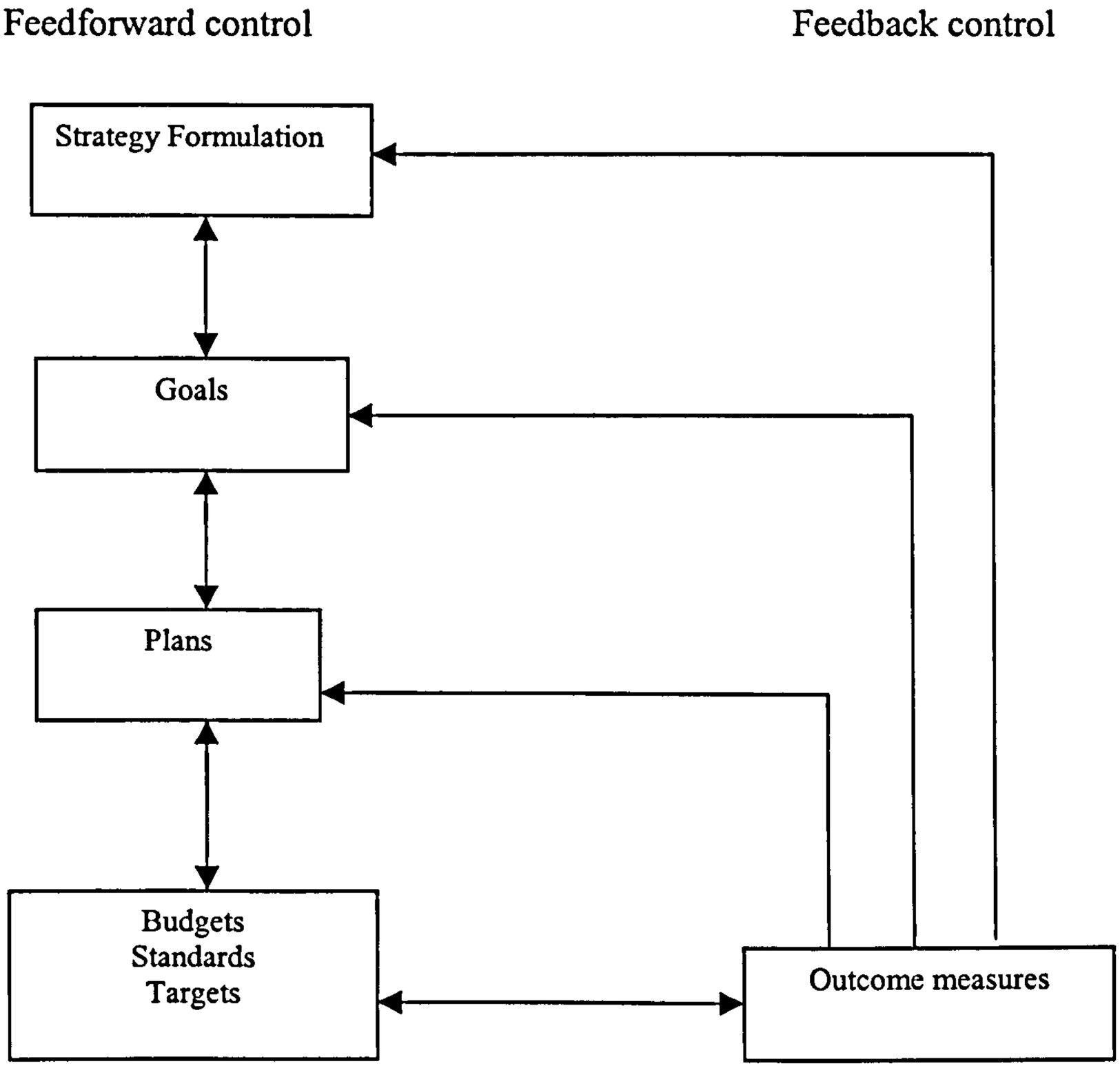


FIGURE 2.16 FEEDFORWARD: FEEDBACK CONTROL MODEL

All of the model frameworks highlighted above possessed unique ways of explaining the dynamics of performance measurement. Just as the definitions of terms, the framework strengths and weaknesses are reflected in the authors' rationale and objectives of the measurement. These are the general frameworks used in many industries in the business world. They have a generalist context in which performance measurement fits in

2.4.2. PERFORMANCE MEASUREMENT IN HEALTHCARE

As with the general framework of performance measurement, healthcare services are even more complex due to the diversity of the population. Performance

measurement in healthcare is a new emerging area in which organisations/agencies worldwide share the view that measuring performance is critical in determing organisational success. This can be seen in the next section, where countries which started to develop comprehensive measures to accommodate issues of health complexities are reflected in the healthcare domain selection. Performance measurement in the realm of health is a new and challenging frontier for health researchers. Since healthcare is the product of government policy, understanding health implies an understanding of the country's health system, as it is a public policy unlike the commercial sector. The healthcare frameworks presented here are incorporated from the national framework of individual countries (section 2.4.2.1 and 2.4.2.2) which are in the domain of the public sector while section 2.4.2.3 and section 2.4.2.4 show frameworks used by the private sectors.

2.4.2.1 National Health Service (NHS) Framework (United Kingdom)

The first framework in this section is the NHS. This framework is a revised version published in January 1998 under the new management. According to the NHS Executive (1998), "NHS Performance framework provides a structure for reviewing NHS performance against outcomes of importance to patients and the public." Moreover, St Helens and Knowsley Health Authority have developed a balanced approach with all the six areas in the framework. This approach is being developed at the local level in order to operationalise policies at the lower level. This framework also supports a benchmarking exercise.

It is a revised and improved version of the NHS framework, since Warring, J (2000), pointed out that "...National Health Services (NHS) performance

measurement is littered with problems." Moreover, Carter (1991) believes that NHS has just about all the factors liable to made the definition and measurement of performance difficult.

"It is characterized by heterogeneity, complexity and uncertainty. That is, it is a multi-product organization, which has to mobilize a large cast with a high degree of interdependence between the different actors and where the relationships between the activity and impact are often uncertain. It is not always clear who 'owns' the performance; the activities of the NHS are only one of the many factors influencing the health of the population".

With the performance framework in mind, NHS Executive has formulated higher-level indicators to measure performance. NHS Executive formulated six main areas that draw the attention of management. They are

TABLE 2.5 THE NHS PERFORMANCE FRAMEWORK

AREAS	ASPECTS OF PERFORMANCE
1. Health improvement	The overall health of populations, reflecting social and environmental factors and individual behaviour as well as care provided by the NHS and other agencies.
2. Fair access	The fairness of the provision of services in relation to need On various dimensions: • Geographical • Socio-economic • Demographic (age, ethnicity, sex) • Care groups (e.g. people with learning difficulties)
3. Effective delivery of Appropriate health care	The extent to which services are: clinically effective (interventions or care packages are evidence-based) • appropriate to need • timely • in line with agreed standards • provided according to best practice service organisation • delivered by appropriately trained and educated staff
Efficiency	The extent to which the NHS provides efficient services, including: • Cost per unit care/outcome • Productivity of capital estate • Labour productivity
4. Patient/carer experience	The patient/carer perceptions on the delivery of services Including: • Responsiveness to individual needs and preferences

	• The skills, care and continuity of service provision • Patient involvement, good information and choice • Waiting times and accessibility • The physical environment; the organisation and courtesy Of administrative arrangements.
5. Health outcomes of care	NHS success in using its resources to: • Reduce levels of risk factors • Reduce levels of disease, impairment and complication of treatment • Improve quality of life for patients and carers • Reduce premature deaths

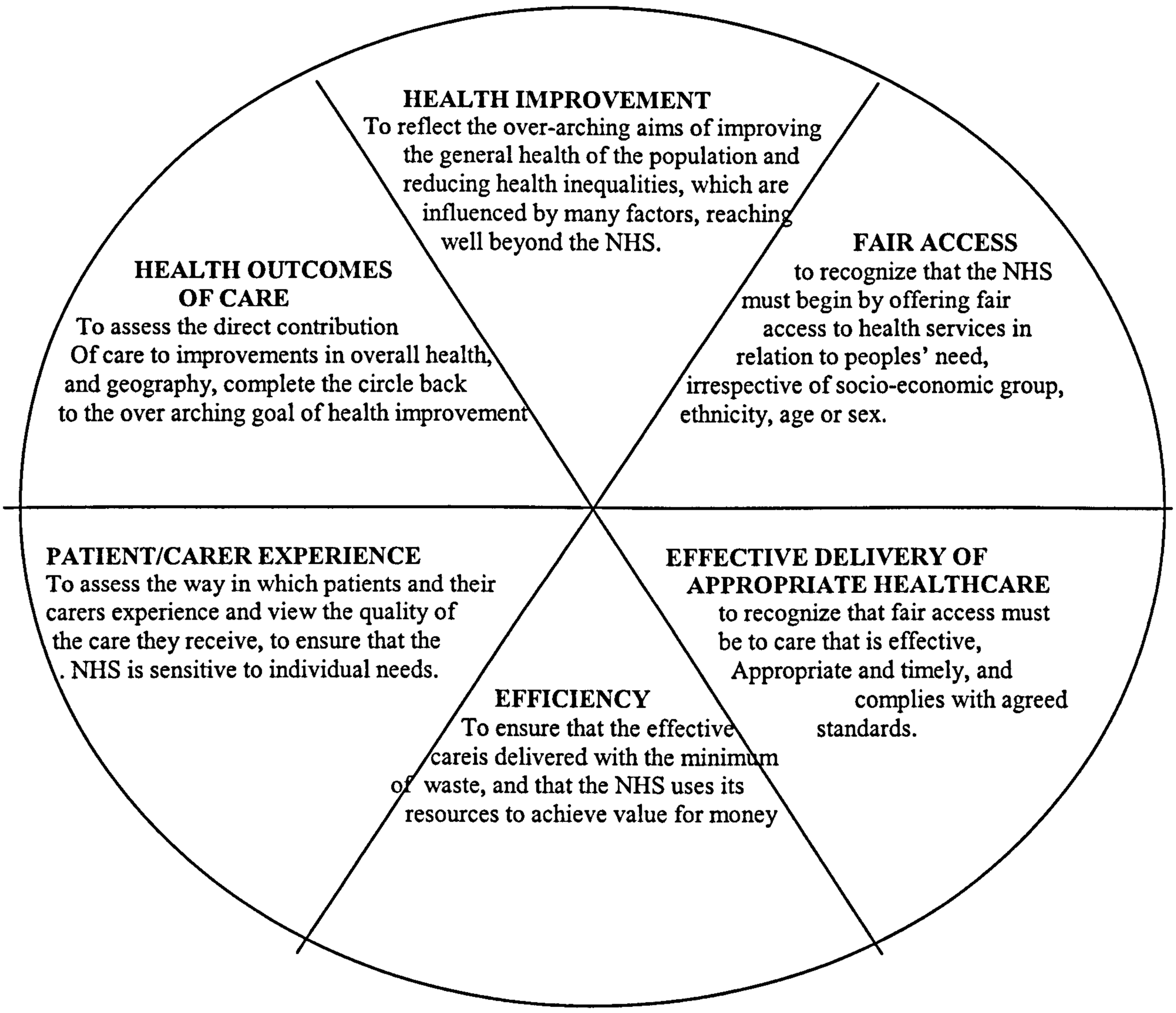


FIGURE 2.17 NATIONAL HEALTH SERVICE

The following are key performance indicators according to the domains they have selected. These indicators are selected after rounds of discussion with health authorities, consultants, private practices and many other health researchers. These are the latest performance indicators available in the new reformed NHS.

TABLE 2.6 HIGH LEVEL INDICATORS SET 1999-2000

1.Health improvement	death from all causes (for people aged 15-64) death from all causes (for people aged 65-74) Cancer registration Deaths from malignant neoplasms Deaths from all circulatory diseases Suicide rates Deaths from accidents
2.Fair access	Surgery rates Size of inpatient waiting list per head of population Adults registered with NHS dentist Children registered with NHS dentist Early detection of cancer
3. Effective delivery of appropriate health care	Disease prevention and health promotion Early detection of cancer inappropriately used surgery surgery rates acute care management chronic care management mental health in primary care cost effective prescribing discharge from hospital
4. Efficiency	Day case rate length of stay in hospital unit cost of maternity unit cost of caring for patients in receipt of specialist mental health services. Generic prescribing
5. Patient/Carer experience	patients who wait less than 2 hours for emergency Admission (through A&E) Patients with operation cancelled for non-medical reason Delayed discharge from hospital for people aged 75 and over First outpatient appointment for which patient did not attend Outpatients seen within 13 weeks of GP referral % of those on waiting list waiting 12 months or more

6. Health outcomes of care	conceptions below age 16 decayed, missing and filled teeth in 5 year old children adverse events/complications of treatment emergency admissions to hospital for people aged 75 and over emergency psychiatric re-admission rate infant deaths survival rates for breast and cervical cancer avoidable deaths in-hospital premature deaths

Adopted from: NHS Performance Framework White Paper

2.4.2.2 Joint Commission Framework (JCAHO)

The Joint Commission (United States of America) started in 1951 with a purpose to upgrade and improve quality of the evaluation processes that underlie its accreditation decisions. It was only in 1986, that it began performance measurement to integrate the accreditation process, and then a uniform set of measures was developed. The Joint Commission has compiled a set of indicators, with a recent pool of 2,000 indicators, which they publicise in the 'National Library of Healthcare Indicators' (NLHI). The following is the origin of NHLI.

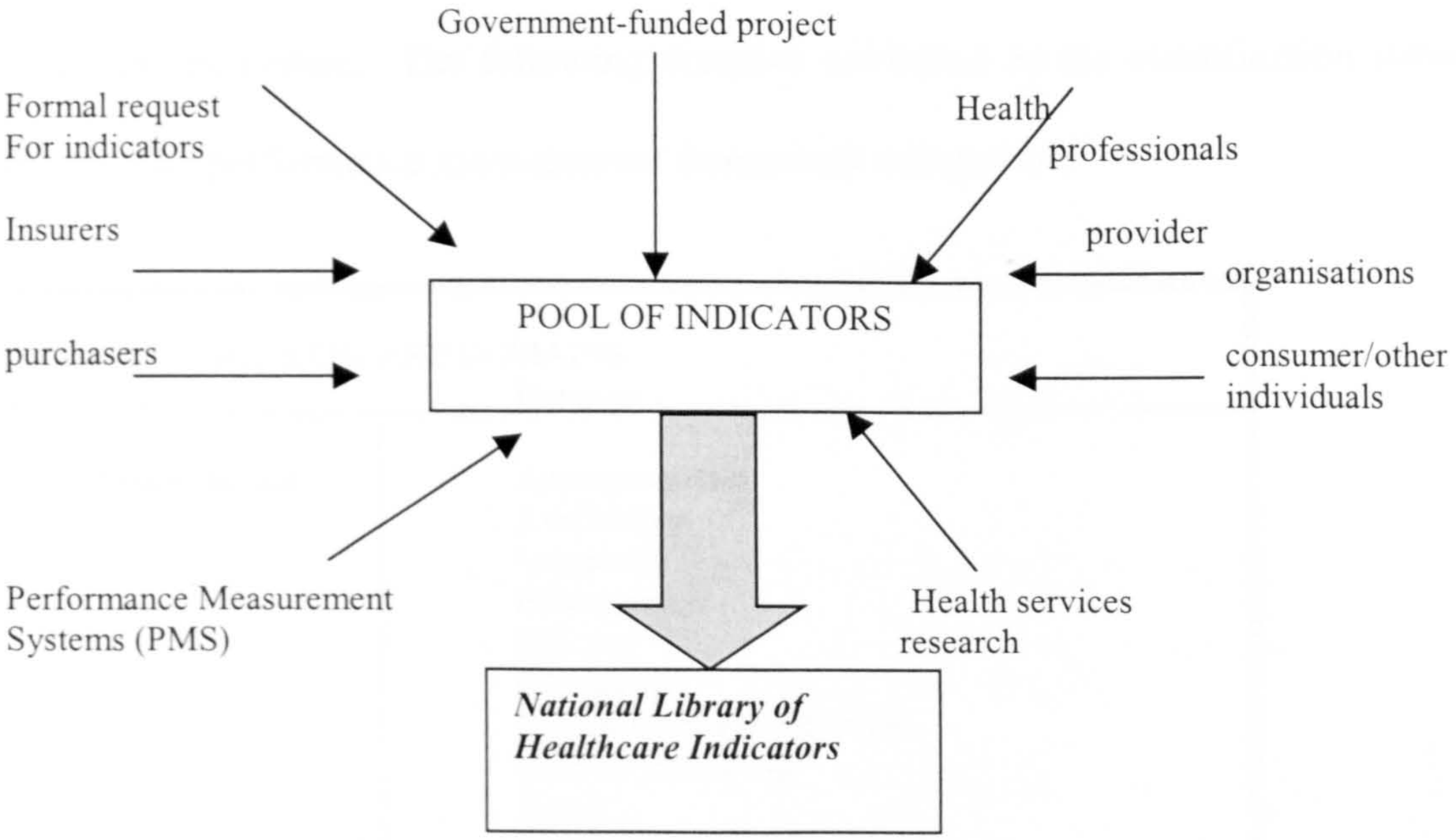


FIGURE 2.19 ORIGINS OF NATIONAL LIBRARY OF HEALTHCARE INDICATORS

In looking at performance measurement, the Joint Commission has identified four broad classifications in explaining their measurement system. They are:

1. Financial - Performance measures that address the organisational structure for coordinating and integrating services, functions or activities across operational components, including financial management

2. Clinical performance - Performance measures that address the care processes and outcomes for specified conditions and procedures

3. Health status - Performance measures that address the functional well-being of specified populations, both in general and in relation to specific conditions

4. Satisfaction - Performance measures that address how well patient/enrollee, purchaser, and practitioner needs are met.

These broad classifications are further formed into domains to establish the measurement system. The following domains are based on the classification stated above. The performance measurement framework consists of:

TABLE 2.7 HEALTHCARE DOMAINS

Dimension	Domains
Clinical performance	Appropriateness Availability Continuity Effectiveness Efficacy Efficiency Prevention/Early detection Respect and caring Safety Timeliness

Health status	Physical functioning Role functioning-physical Bodily pain General health Vitality Social functioning Role functioning -emotional Mental health Reported health transition
Satisfaction	Patient/enrollee Purchaser Practitioner
Financial performance	Financial stability Utilisation System integration System description Credentialing/reappointment

The researcher then looked into aspects of performance whose domains are covered in the framework. The following table explains these aspects of performance.

TABLE 2.8 ASPECTS OF PERFORMANCE DOMAIN AREAS	ASPECTS OF PERFORMANCE
Appropriateness	The degree to which the care provided is relevant to the patient's clinical needs, given the current state of knowledge.
1. Availability	The degree to which appropriate care is available to meet the patient's needs.
2. Continuity	The degree to which the care for the patient is coordinated among practitioners, among organisations, and over time.
3. Effectiveness	The degree to which the care is provided in the correct manner, given the current state of knowledge, to achieve the desiredor projected outcome(s) for the patient.
4. Efficacy	The degree to which the care of the patient has been shown to accomplish the desired or projected outcome(s).
5. Efficiency	The relationship between the outcome (results of care) and the resources used to deliver patient care.

2.4.2.3 Performance Measurement Matrix

Malloch (1999) promulgated six dimensions to assess the overall impact on performance, that is patients (customer); caregiver (employee); provider (service organisation); quality; and efficiency. Performance Measurement Matrix (PMM) emerged as a model that is designed to assist professional as well as managers in their objective-based decisions from a multidimensional perspective.

TABLE 2.9 PERFORMANCE MEASUREMENT MATRIX : COMMON MEASURES

Stakeholders groups	Quality	Productivity	Cost
Patient/family	- clinical effectiveness - symptoms management - patient/family satisfaction - functional health status - absence of adverse events	- admission/year - length of stay - number of visits/episode of illnesses - waiting time for treatment - bed days/1000 - unit of service/treatment episode	- cost/service -price/discharge - price/visit - supplies or equipment/episode
Caregiver/employee/ Provider	- provider credentials - technical skills - provider/staff satisfaction	- labour hours/service - turnover - staff mix - avg time from admission to thrombolytic therapy	- wages - benefits
Organisation	- community reputation - accreditation - awards/recognition - compliance with regulations	- utilisation of services - retention members - debt ratio - inventory turnover - equity growth rate - cost/reimbursement ratio	- net income/loss - revenue - reimbursement

The PMM model assists health administrators in giving an objective evaluation of a health care programme. One of the unique aspects of the model is the confounding factors (eg. stakeholder) as one of the dimensions in the model, which is believed to be comprehensive in nature. Each stakeholder has their own

priorities/interest in the formulation of healthcare policies. The following are examples of stakeholders' priorities:

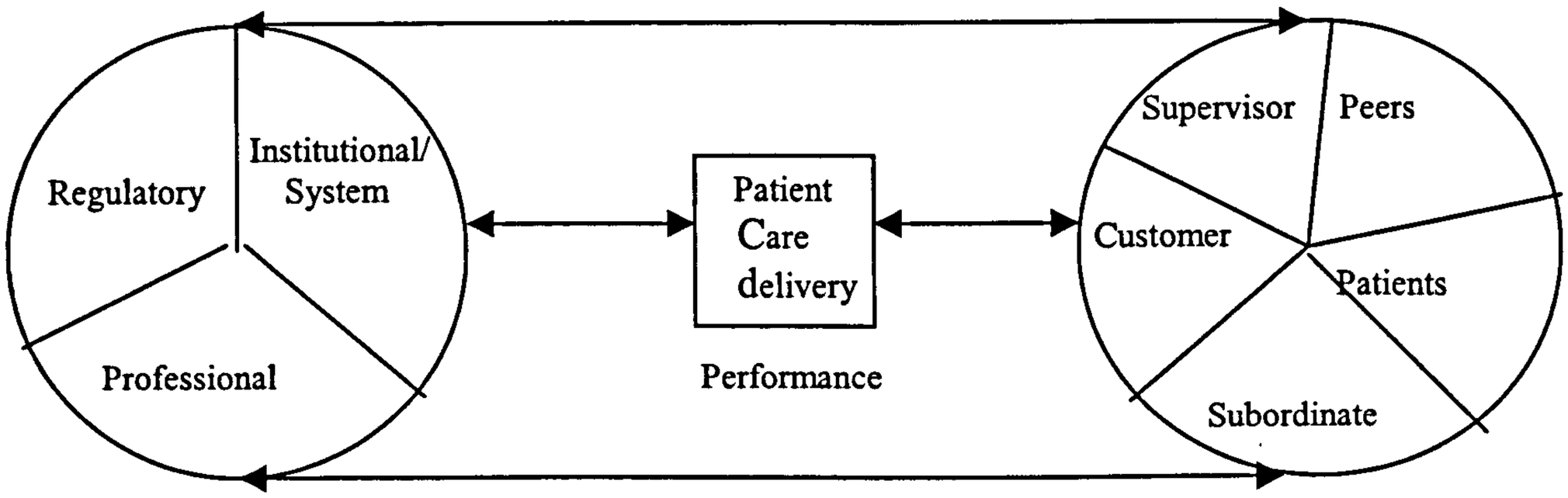
• Administrators	[cost effective programme]
• Caregivers	[assistance in providing services]
• Physician	[acquiring new biotechnology]
• Patients	[demand effective and appropriate servies]
• Shareholders	[dividend policy]

These diverse groups of people have their personal objective and motivation in planning health care, and PMM models incorporate this diversity. "The model provides a framework to weigh and balance key options and the impact of decisions based on organisational priorities" (Malloch, 1999). However, the model fails to address political and psychological factors, such as 'quick' decisions, inappropriate pressure from stakeholders, and fear of misuse of information. The decision derived is 'raw' in terms of providing limited variables for analysis.

2.4.2.4 Multidimensional Performance Measurement Model

Another comprehensive model is the Popovich 'multidimensional model' (Popovich, 1998). It is meant to complement the Malloch Performance Matrix. Popovich presents a model that is useful to evaluate performance at the individual level or health care systems level. This model is multidimensional in nature and the core of the model is patient care delivery. The evaluation of patient care is based on the multisource standards and multisource assessment. This model is robust in the sense that it presents the complexity of patient care in a healthcare system. The system is moving towards clinical integration, in which the system recognises the

patient as a 'core' unit of activities and brings professionals and workers to the core. This system is an exact replica of a modern manufacturing layout (fixed layout) of assembling bulk products. It is highly efficient if the product is of high value and material handling is not possible due to its size and cost pilferage (Slack et al 1998; Gaither, 1997; Adam and Everett 1996). This model represents today's integrated healthcare promulgated by Minnick (1997) and other authors in the field of healthcare.



Adopted from: Popovich JM (1998), "Multidimensional Performance Measurement", Journal of Nursing Quality, vol 12, no 4, pp 14-21.

FIGURE 2.120 MULTIDIMENSIONAL PERFORMANCE MEASUREMENT MODEL

Multisource Standards

"Standards have evolved from outlining minimal acceptable performance to describing optimal achievable standards" (Luce, Bindman and Lee 1994 and Wakefield 1994). These sources are from regulatory, professional and "institution-or-system specific".

Using standards from different sources enables the user to have a generic concept of standards incorporating comprehensive views of quality. These views will ultimately create robust standards for an organisation to implement. Popovich encourages the use of multisource standards for patient benefits.

Multisource Assessment

Edwards and Ewen in their book, *360 Degrees Feedback*, state that multisource assessment provides performance evaluations that are more reliable and valid than a single source. The arguments for multisource assessment have the same concepts as a multisource standard. Evaluation gains more insight not from one view but from multiperspective views on evaluation of the models.

Popovich's, multidimensional performance measurement model is comprehensive,(Malloch 1999; and Eddy 1999), taking account of all standards and assessments of views from different perspectives. Popovich acknowledges the dynamic nature of the measurement system and also understands that models evolve to incorporate new information development as time goes on. Therefore, it is sufficient to say that the model is robust in advanced health care communities. Moreover, it is the Joint Commission's fundamental belief that "Accurate, complete, and relevant performance data can provide users of organisational services with objective evidence on which quality judgements can be based".

2.4.2.5 Critical Success Factors Framework

In order to select a reasonably good (class leader) hospital, the researcher used the critical success factors (CSF) approach. This approach enables good results to emerge from the myriad factors that exist within the organisations. CSF is synonymous with certain other terms used in management areas. For example key success factors (KSF) (Rangone 1997), key result areas (KRA) (Neely et al 1999; Waggoner et al 1997), key business process (KBP) (Jones 1994), key measures (American Productivity and Quality Centre [APQC]), core measures (Joint

Commission of Accreditation of Healthcare Organization [JCAHO]), and various other terms. The choice of terms varies from author to author. The selected terms used help the authors to describe the context in which these terms apply. All of these terms, according to Ansoff (1965), Andrew (1971), Pater (1980), Hax and Majluf (1985), De Vasconcellos and Hambrick (1989) and Grant (1991) are "..factors which are critical for the well-being and success of a company in a given industry."

The concept of CSF was first introduced by Rockart in the late seventies. Rockart (1979) defines CSF as "...the limited number of areas in which results if they are satisfactory will ensure successful competitive performance for an organization." In other words, it is a means of focusing system activities on those areas that return the highest benefit to the business client. These CSFs' are a crucial element in an organisation in which things must go right if the business is to flourish. Moreover, Byers and Blume (1994) believes that CSFs are areas that ".....should receive constant and careful attention from management. The current status of performance in each area should be continually measured, and that information should be made available."

The CSF concept should be communicated across organisations, from shop floor to the top floor. It is a means of sharing responsibilities and comprehends the whole operation of the business. As well as Rockart(1979) and Byers and Blume (1994), Boynton and Zmud (1984) agree that CSF "....attempts to make explicit these few key areas that dictate managerial and organizational success." Martin (1990), indicates that CSF has "an appealing feature.....it can be done quickly with little manpower." Martin (1982) noted that the CSF approach "is equally applicable to any organization and to any managerial level within an organization in which

multiple functions report to a manager." According to Bergeron and Begin (1989), the CSF approach has been successful in a variety of organisational settings such as manufacturing, healthcare, aeronautics, electronics and education.

It is the researcher's belief that CSF is used to gauge variables that have a great impact on the objectives of the organisations. These are the factors that have profound effects on activities and programmes set by the organisation. This will be explained further in the methodology section. The CSF mentioned in this thesis is as follows:

Patient satisfaction Patient perceived quality Attitude of hospital personnel Waiting time Internal complaint External complaint	***Patient Care Experience***
Complication after surgery Complication rate during surgery Mortality rate Readmission rate Total cost per case Surgery rate	***Effective Delivery of Care***
Length of stay Patient cost per day Size of outpatient Information systems usage Communication between functions	***Efficiency in Operations***
Liquidity Profitability Revenue generated Expenditure incurred Return on total assets	***Financial stability***
Occupancy rate Equipment utilisation Workforce utilisation Facilities utilisation Inventory management	***Capacity utilisation***

FIGURE 2.20B CSF ACCORDING TO DOMAINS

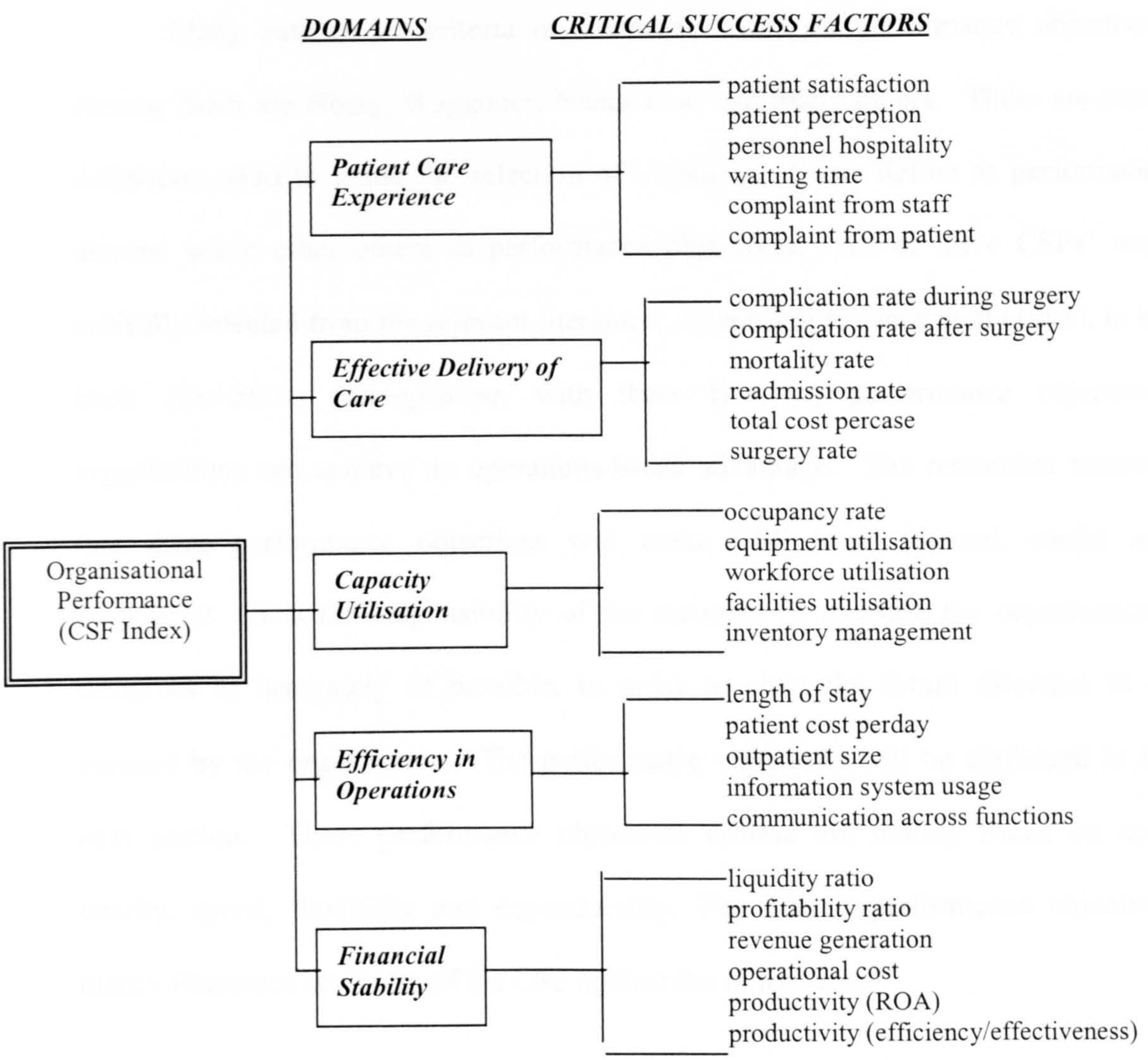


FIGURE 2.21 SCHEMATIC VIEW OF MEASURE DOMAINS IN RELATION TO CSF

How then does the researcher select the CSF, as there are many different CSF found in healthcare and performance measurement literature? The researcher follows the guidelines of Slack et al (1998), known as performance objectives.

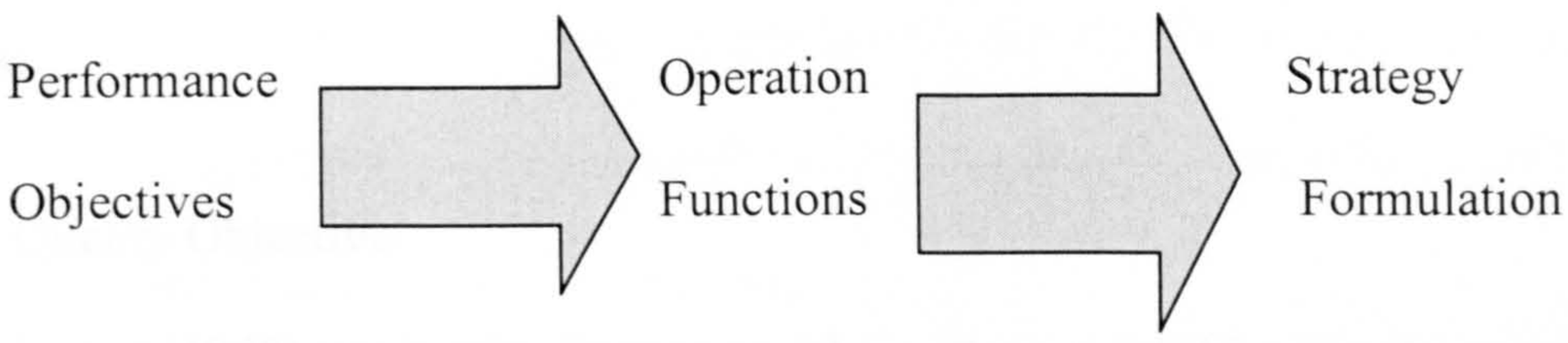


FIGURE 2.22 PERFORMANCE OBJECTIVE RELATIONSHIP

Many authors set criteria or standards based on performance objectives. Among them are Neely, Waggoner, Nanni et al and many others. There are many definitions used to guide the selection of measures. Some define as performance drivers, while other others as performance objectives. All of these CSFs' were critically selected from the relevant literature. According to Slack et al (1998), in his book *Operations Management*, with these five (5) performance objectives, organisations can achieve an operations-based advantage. The researcher believes that these performance objectives will make CSF more focused, useful and purposeful. It is the responsibility of the manager to measure the organisation's resources as accurately as possible, in order to chart the future direction to be pursued by the organisation. The performance objectives will be explained in the next section. These performance objectives criteria are mainly based on cost, quality, speed, flexibility and dependability. The domain-performance objectives matrix illustrates attributes of the CSF against the objectives.

Performance Objectives Approach

The CSF is chosen from these performance objectives so that the organisation gets a full and accurate picture of organisation's financial performance. This has been discussed extensively in the management literature. The details of it is as follows:

- Quality Objective

As Slack et al (1998) put it, "Quality means 'doing things right' but the things which operations need to do right may vary according to the kind of operation." Basically,

TABLE 2.10 DOMAIN PERFORMANCE OBJECTIVE MATRIX

Domains	No	Critical Success Factors	Cost	Quality	Speed	Flexibility	Dependability
Patient Care Experience	1.	Patient satisfaction		✓			✓
	2.	Patient perceived quality		✓			
	3.	Attitude of hospital personnel		✓			
	4.	Waiting time in general		✓	✓	✓	✓
	5.	Complaint in general		✓	✓	✓	
Effective delivery of Care	6.	Complication index	✓	✓		✓	
	7.	Mortality index	✓				
	8.	Readmission index	✓	✓	✓	✓	
	9.	Total cost per case	✓			✓	
	10.	Surgery rate		✓	✓	✓	✓
Efficiency in Operations	11.	Length of stay	✓		✓	✓	✓
	12.	Patient cost per day	✓				
	13.	Size of outpatient	✓	✓	✓	✓	✓
	14.	Information system usage					✓
	15.	Communications between functions			✓	✓	✓
Financial Stability	16.	Liquidity	✓				
	17.	Profitability	✓	✓		✓	
	18.	Revenue generated	✓	✓		✓	
	19.	Expenditure incurred	✓			✓	
	20.	Return on total assets	✓		✓	✓	
Capacity Utilisation	21.	Occupancy rate	✓			✓	
	22.	Equipment utilisation	✓	✓	✓	✓	✓
	23.	Workforce utilization		✓	✓	✓	✓
	24.	Facilities utilisation	✓	✓	✓	✓	✓
	25.	Inventory management	✓	✓	✓	✓	✓

Source: Researcher compilation from various literature

quality could mean that patients receive the most appropriate treatment, or that treatment is carried out in the correct manner (medically sound). In other words, quality has an impact on the visible aspects of the operation. Also, it has a profound influence on customer satisfaction in general.

- Speed Objective

"Speed is concerned with how long customers have to wait to receive their products/services." For example the time between requiring treatment and receiving treatment should be kept to a minimum. The faster the organisations service the customer, the more satisfied the customer is. Many authors have studied waiting time to enhance the organisation's operations function.

- Dependability Objective

"Dependability objective means doing things in time for customers to receive their goods/services when they were promised." For example, in a hospital, the proportion of appointments which are cancelled should bed kept to a minimum and appointment times should be kept to. Customers judge dependability of given goods/services once it has been delivered.

- Flexibility Objective

"Flexibility means being able to change the operation in some way. This may mean changing what the operation does, how it is doing it or when it is doing it." For a hospital, it is the ability to adjust the number of patients treated and the ability to reschedule appointments.

- Cost Objectives

"The lower the cost of producing their goods and services, the lower the price charge to the customers." Lowering cost is fundamental in any operation.

The Performance Objectives listed above are the basis for the researcher's selection of CSF. The next section will look into gaps in the literature.

2.5 GAPS OF THE LITERATURE

This section sets out to explain gaps that have been identified in the study. This identification process is represented using the taxonomy approach in table 2.11.

Gaps identified are:

GAP 1: Developed versus developing countries
GAP 2: Manufacturing versus services
GAP 3: Healthcare versus other industries eg chemical, textile, banking etc
GAP 4: Public or private (individual) versus public and private (comparative)
GAP 5: Survey (positivistic) versus case study (phenomenology)
GAP 6: Theoretical (literature) versus empirical (fieldwork)

There is a lack of empirical research in the area of performance measurement. Most performance measurement concentrates on the use of measures (metrics) to explore organisations. Performance measurement is not put into context by most researchers, a phenomenon that is explained in Chapter Four. Advocates of performance measurement systems (Crawford 1988, Lockamy 1991, Brignall 1993 and recently many others) believe that performance measurement has been presented in a simplistic and deterministic way, as noted by Brignall (1993). This type of study only enables the researcher to identify the 'what' of the measurement, not the 'how' and 'why'. Putting measurement into context is an important pathway to understand the nature of measurement systems. As can be seen from table 2.11, new forms of research have emerged from researchers interested in understanding performance measurement systems. Many researchers opt for survey instead of case study, that

lead to descriptive measures of organisations. The 'how' and 'why' can be seen from case study. Euske et al (1993) believe that there is a need of in-depth understanding of the organisations, and the details of how, what and why performance is measured.

Table 2.11 shows that services dominate most of the research currently undertaken. This was not so a few years ago; manufacturing has always been a favourite sector for research in performance measurement literature. The first services research was pioneered by Fitzgerald et al (1991), then followed up by Silvestro (1996) as services became an important sector of the economy. This has been discussed in Chapter Two of the thesis. It seems that more empirical work (more than 50%) is done on manufacturing than services. Moreover, there is still a lack of literature on performance measurement in the area of healthcare services (less than 30%). Most of the research on performance measurement concentrates on either the private sector or the public sector. Most research deals with individual sectors of performance measures. However, this study attempts to make a comparative analysis from the perspective of both sectors (public and private) on performance measurement systems, that is to understand the nature of the measurement systems in a different context; as Eisendhart (1989) puts it, "qualitative methods can also give intricate details of phenomena that are difficult to convey using quantitative techniques". Table 2.11 illustrates the gaps highlighted above and collates similar studies.

Last, but not least, the aim of the study is to understand the nature of performance measurement in the context of healthcare services in Malaysia. In doing this, the researcher hopes to identify elements in the systems that are common

in both practices, the public as well as the private sector. The theory behind this has been well explained by Zairi (1994), who shows that organisations have separately developed similar approaches to performance measurement, based on the need to manage processes in order to maximise customer satisfaction.

Table 2.11 STUDIES CONDUCTED ON PERFORMANCE MEASUREMENT

Item	Author(s)	Year	Method	Size	T/E	S/M	Location	Concept	Industry
1.	Ahmed, N et al	1996	Survey	655	E	M	US	PM	Textile
2.	Arts et al	1998	-	-	T	-	US	PMS	Others
3.	Ashmos J et al	2000	Survey	164	E	S	US	PM	Hospital
4.	Aggarwal & Zairi	1997	Survey	49	E	S	UK	PM	Health
5.	Aveyard, P	1997	-	-	T	S	UK	PMS	Health
6.	Andaleeb, S	1998	Survey	390	E	S	US	PM	Hospitals
7.	Al-shammari	1999	Survey	15	E	S	Jordan	PM	Hospitals
8.	Adam et al	1997	Survey	977	E	M	Europe/Asia/US	PM	Others
9.	Azzone & Noci	1998	-	-	T	M	Italy	PM	Others
10.	Anderson et al	1997	Cases	7	E	S	Canada	PM	Others
11.	Bourne et al	2000	-	-	T	M	UK	PMS	Others
12.	Bititci et al	2000	-	-	T	S	UK	PMS	Others
13.	Brignall & Ballantine	1996	-	-	T	S	UK	PMS	Others
14.	Brown & McDonnell	1995	Survey	131	E	S	UK	PM	Hotels
15.	Bennet, A	1994	-	-	T	S	UK	PM	Health
16.	Bij, D	1999	-	-	T	S	Netherland	PM	Health
17.	Ballantine et al	1998	Cases	2	T	S	Sweden	PM	Health
18.	Bauly, J	1994	-	-	T	M	UK	PM	Others
19.	Brah et al	2000	Survey	950	E	S	Singapore	PM	Transport
20.	Bart & Tabone	1999	Survey	496	E	S	Canada	PM	Hospital
21.	Boaden & Zolkiewski	1998	-	-	T	S	UK	PM	Health
22.	Buchana & Wilson	1996	Cases	1	E	S	UK	PM	Hospital
23.	Curtright et al	1999	Cases	1	T	S	US	PM	Health
24.	Casebeer et al	1998	Cases	1	T	S	Canada	PM	Health
25.	Carrington et al	2000	Survey	163	T	S	Australia	PM	Police
26.	Crombie & Davies	1998	-	-	T	S	UK	PM	Health
27.	Counte et al	1988	Survey	114	E	S	US	PM	Hospital
28.	Charns, M	1997	-	-	T	S	US	PM	Health
29.	Charlton, B	1997	-	-	T	S	UK	PM	Health
30.	Ciptono & Mayasari	2000	Survey	50	E	S	Indonesia	PM	Hospital
31.	Coast et al	1998	Survey	241	E	S	UK	PM	Hospital
32.	Callahan	1999	-	-	T	S	US	PM	Health
33.	CIMA	1993	Survey	77	E	M	UK	PM	Others
34.	Crawford	1988	Cases	6	E	M	US	PM	Others
35.	Daniel & Burns	1997	Cases	1	E	M	UK	PM	Cellular
36.	Eddy, M	1998	-	-	T	S	UK	PM	Health
37.	Flapper et al	1996	Cases	1	T	S	Netherland	PM	Others
38.	Fortuin L	1986	-	-	T	S	Netherlands	PM	Others
39.	Forza & Salvador	2000	Survey	164	E	S	UK	PM	Pharmacy
40.	Fitzgerald & Dufour	1998	cases	31	T	S	UK/Canada	PM	Health
41	Fowler & Campbell	2001	Survey	109	T	S	UK	PM	Pharmacy

Item	Author(s)	Year	Method	Size	T/E	S/M	Location	Concept	Industry
42.	Fuentes, C	1999	Survey	170	E	S	Spain	PM	Hospital
43.	Forker et al	1996	Survey	65	E	M	US	PM	Furniture
44.	Gooijer, J	2000	-	-	T	S	Australia	PM	Government
45.	Globerson, S	1985	-	-	T	S	US	PMS	Others
46.	Ghalayini & Noble	1996	-	-	T	M	US	PMS	Others
47.	Ghobadian & Woo	1996	-	-	T	S	UK	PM	Others
48.	Geiskes et al	1999	Cases	1	E	M	Greece	PM	IT
49.	Glandon et al	1987	-	-	T	S	US	PM	Hospital
50.	Garrard et al	1998	-	-	T	S	UK	PM	Health
51.	Gross & Nirel	1998	Survey	523	E	S	Israel	PM	Health
52.	Gelders & Maes	1994	Survey	60	E	M	Belgium	PM	Others
53	Hoopes & Postrel	1999	Cases	1	E	M	US	PM	Software
54.	Jannadi & Saggaf	1999	Cases	1	E	S	Arab Saudi	PM	Electricity
55.	Johnston, R	2001	Survey	40	E	S	UK	PM	Others
56.	Kuwaiti & Kay	2000	Survey	301	E	S	Bahrain	PMS	Finance
57.	Kaplan & Norton	2000	-	-	T	-	US	PM	Others
58.	Kazandijan et al	1996	Cases	4	E	S	US	PM	Hospital
59.	Kopczynski & Lombard	1999	-	-	T	S	US	PMS	Others
60.	Kutucuaglu et al	2001	-	-	T	M	UK	PM	Others
61.	Keyt et al	1994	Survey	650	E	S	US	PM	Restaurant
62.	Kerr, L	1992	Cases	1	T	M	UK	PMS	Tyre
63.	Llwellyn et al	1999	Cases	2	T	S	UK/Canada	PM	Health
64.	Letza,S	1996	Cases	3	E	S	UK	PM	Others
65.	Lockamy & Spencer	1998	-	-	T	-	US	PM	Others
66.	Lockamy, A	1998	-	-	T	S	US	PMS	Others
67.	Li & Collier	2000	-	142	E	S	US	PM	Hospital
68.	Moon & Fitzgerald	1994	Cases	1	E	S	UK	PMS	Transport
69.	Manchehri, G	1999	-	-	T	S	US	PMS	Others
70.	McAdam & Bannister	2001	Cases	1	T	M	UK	PM	Petroleum
71.	Neely et al	2000	-	-	T	M	UK	PM	Aerospace
72.	Najmi & Kehoe	2001	-	-	T	S	UK	PM	Others
73.	Nixon, B	1996	Cases	1	E	M	UK	PM	IT
74.	Neely et al	1999	-	-	T	S	UK	PM	Others
75.	Noci, G	1995	-	-	T	S	Italy	PM	Others
76.	Nadzam & Nelson	1997	Cases	1	T	S	US	PM	Hospital
77.	Otley, D	1998	-	-	T	S	UK	PM	Business
78.	Peursem et al	1995	-	-	T	S	New Zealand	PM	Health
79.	Popovich, J	1998	-	-	T	S	US	PMS	Health
80	Parasuraman et al	1991	Cases	5	T	S	US	PM	Others
81.	Rolstadas, A	1998	-	-	T	M	Norway	PM	Others
82.	Robinson et al	1997	Cases	5	E	S	UK	PM	Hospital
83.	Raak et al	1999	Cases	1	T	S	Netherland	PM	Health
84.	Sinclair & Zairi	1995	Cases	15	T	S	UK	PMS	Others
85.	Streib & Poister	1999	Survey	695	E	S	US	PMS	Municipal
86.	Schmenner & Vollmar	1994	Survey	92	T	M	Europe/Asia	PM	Others
87.	Sidhu et al	2000	Survey	250	E	S	Netherland	PM	Telecomm
88.	Toni & Tonchia	1995	Cases	1	E	M	Italy	PMS	Appliances
89.	Turpin et al	1995	Survey	700	E	S	US	PM	Hospitals
90	Tsang et al	1999	-	-	T	M	US	PMS	Others
91.	Upton, D	1998	Survey	110	E	M	New Zealand	PM	Others
92.	Vaivo, J	1999	Cases	1	E	M	Finland	PM	Chemical
93.	Vora	1992	Survey	333	E	M	US	PM	Others
94.	Wouters et al	1998	Survey	150	T	S	Netherlands	PMS	Distribution
95.	White, G	1996	-	-	T	M	US	PMS	Others
96.	Walsh	1989	Survey	149	E	M	US	PM	Others
97.	Woodside et al	1999	Survey	93	T	S	US	PM	Others

Item	Author(s)	Year	Method	Size	T/E	S/M	Location	Concept	Industry
98.	Yasin & Yavas	1999	-	-	T	S	US	PM	Food
99.	Youssef et al	1995	Survey	300	E	S	UK	PM	Hospital

Key:
T = Theoretical based research E = Empirical based research
Survey = postal questionnaires Cases =Case study to research
PM = research on performance measures (indicators) PMS = research on performance measurement systems
Size = sample size collected for the survey
Industry = sectors of the industry collected for the study
S= Services M=Manufacturing

2.6 SUMMARY

This chapter reviews the relevant literature on performance measurement. There is a vast array of literature in the field, which begins by defining performance measurement, performance measures and performance measurement systems. This sets the scene for performance measurement, as definitions have been an issue among authors in the field. There has been little empirical research on using balanced measures between financial and non-financial indicators. Performance measurement systems take into account the context in which they operate, and thus the aim is to develop a fully integrated system of performance measurement (Gregory, 1993; Blenkinshop and Burns, 1993 and McNair et al 1989).

The next step is to place performance measurement in the context of healthcare services. This context becomes crucial, as healthcare is a complex and multidimensional industry as compared to other industries. By studying and documenting the performance measurement systems that are in place in healthcare organisations, and comparing this in the literature, it is hoped to produce a generalised model of performance measurement systems of healthcare services.

Frameworks were explored to give the researcher a comprehensive view and appreciation of performance measurement systems. The researcher then proceeded with gaps identified in the literature, in order to highlight the importance of further research in the field.

In Chapter Three, the performance measurements are outline in the context of the Malaysian practices. This will provide the basis/foundation of the study for the researcher to explore in more depth the literature and empirical evidence in the host country.

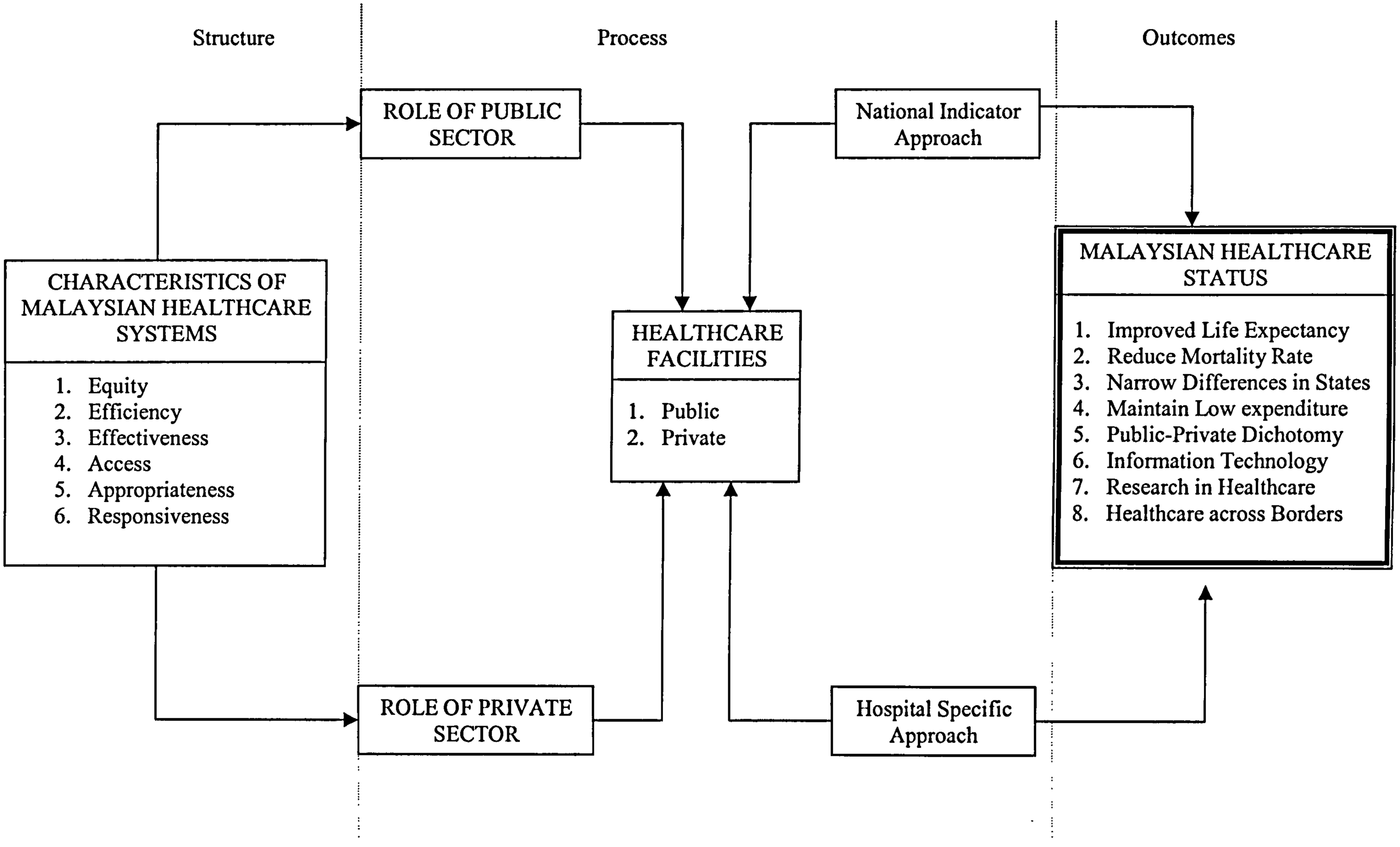
CHAPTER 3
PERFORMANCE MEASUREMENT PRACTICES IN MALAYSIA

3.1 INTRODUCTION

This chapter provides an overview of performance measurement systems practices in Malaysia. It is intended to capture the very essence of measuring activities in Malaysian hospitals using secondary data obtained from external sources. The objective of this chapter is to provide an understanding of the factors that shape the performance measurement system in the Malaysian context. It serves as the environmental scanning chapter for this thesis. It attempts to explain the working of the Malaysian system. Figure 3.1 is a schematic diagram to represent performance measurement practices in the Malaysian context and is used as a roadmap for this chapter. The researcher starts with descriptions of the characteristics of Malaysian healthcare systems. This is putting measurement system into Malaysian healthcare context. Then it explains the process in the systems and national indicators used to reflect the health systems. The last section is devoted to outcomes, that is Malaysian healthcare status. This chapter is designed using Donabedian (1980) approach in healthcare, that is STRUCTURE-PROCESS-OUTCOME. This approach has been discussed in the literature chapter.

The researcher not only interviewed participants of the case studies but also governmental and non-governmental agencies that directly have an impact on

Figure 3. 1 BIRD'S EYE VIEW OF PERFORMANCE MEASUREMENT PRACTICES IN MALAYSIA



healthcare policy. In researching the healthcare sector in Malaysia, the researcher faced difficulties in aggregating secondary data due to the fact that a research culture is not inculcated in its people. Data are fragmented and segregated across agencies. There is no systematic keeping of records. Moreover, the healthcare sector is not a research priority in the country, as can be seen in a later section (Ministry of Health, Malaysia, 1998). The discussion in this chapter is limited to West Malaysia only as most government records are centrally located in the capital city, Kuala Lumpur.

Malaysia is made up of Peninsular Malaysia (West Malaysia) and Sabah and Sarawak (East Malaysia). It covers a total land area of 298,000 square kilometres. Sabah and Sarawak encompass 198,000 square kilometres. The two regions are separated by about 650 kilometres of South China Sea (Malaysia Kita 1991). The society in Malaysia is pluralistic in nature comprising of three main ethnic groups, mainly Malays, Chinese and Indians. The Malays are the earliest immigrants from the Malay Archipelago who traded around the Straits of Malacca (Information Malaysia, 1999). They are considered the indigenous people and are called Bumiputras. The term Bumiputra, literally meaning "prince of the land", is used by the government in the context of the Malay races as well as other indigenous groups in Sabah and Sarawak (eg Iban, Dayak, Kadazan and other sub-ethnic groups). During the British Colonial period, there is an influx of Chinese and Indians into the country in which it altered the composition of the society.

Most of the Malaysian health statistics have been compiled by the Department of Statistics, Ministry of Health, Institute of Public Health, Malaysian Society for Quality of Healthcare and other government organisations. These units collect different types of statistics, basically vital statistics: such birth rate, death rate,

fertility trends, causes of death and other information. The main health statistics collected are morbidity and mortality indices, epidemiology of diseases, population health and other critical statistical reporting.

3.2 GOVERNMENT AS REGULATOR OF HEALTHCARE

From the interviews with agencies, the researcher found out that there are some studies have been conducted to assess the direction of the Malaysian healthcare system. Since 1983, the Economic Planning Unit has been involved in initiating various studies; among them are the Westinghouse study, the first study to look into the option for healthcare financing, the Birch and Davies study to assess feasibility of the health security fund, and the study by Malcom Taylor, Canada to look into healthcare delivery systems. These are the important studies that have been conducted but reports are not available for public scrutiny. At the end of all these efforts, the government has yet to choose the future direction of healthcare systems in Malaysia.

As a developing country, Malaysia is on a par with other developing and developed countries in terms of health status, as can be seen from the health vital statistics, mortality and morbidity statistics in a later section (source: researcher interview). In making the effort to understand performance measurement practices in Malaysia, the evidence of the literature shows that the context in which the measurement exists must be well understood because the performance measurement system is nurtured and shaped by its environment. The contexts referred to are public health, health manpower, characteristics of healthcare systems, healthcare

facilities, roles of public and private healthcare systems, and health status and comparison among countries, developing as well as developed nations. Only when these contexts have been addressed in this chapter will it be possible to understand how and why the systems exist in Malaysia in their present form.

3.2.1. Ministry of Health Malaysia

In regulating healthcare, the Ministry of Health, Malaysia plays a major role in formulating policies and procedures. The Ministry of Health functions as the government's right arm in implementing policies. The goals of the Ministry of Health are to build a partnership for health, to facilitate and support the people to:

- Attain fully their potential in health
- Motivate them to appreciate health as a valuable asset
- Take positive action to improve further and sustain their health status to enjoy a better quality of life.

(Source: Eighth Malaysia Plan 2001-2005)

The Ministry of Health Malaysia in its Eighth Malaysian Plan (2001-2005) has explicitly expressed its commitment and dedication in providing healthcare to the Malaysian population. Among other things,

"Prudent macroeconomic management to ensure the optimum and efficient utilisation of resources as well as efforts to strengthen the resilience of the financial monetary system will be required to sustain growth."

Source: Eight Malaysia Plan 2001-2005

In aligning with the above commitment, strategies were formulated to address issues that are critical to Malaysian development and also the future direction of the healthcare sector in general, including :

- Improving accessibility to affordable quality healthcare
- Expanding the wellness programme
- Promoting coordination and collaboration between public and private sector providers of health
- Increasing the supply of various categories of health manpower
- Strengthening the telehealth system to promote Malaysia as a regional centre for health services
- Enhancing research capacity and capability of the health sector
- Developing and instituting a healthcare financing scheme
- Strengthening the regulatory and enforcement functions to administer the health sector, including traditional practitioners and medical products.

Source: Ministry of Health (1999), Annual Report, Department of Printing, Ministry of Health Malaysia.

In order for Malaysia to transform its economy on a par with other developed nations, it has to monitor every sector of the economy to ensure growth. The same goes for the Malaysian healthcare sectors. The vision of Malaysian health has been formulated by the Ministry of Health and is approved by Cabinet. The vision is,

"Malaysia is to be a nation of healthy individuals, families and communities, through a health system that is equitable, affordable, efficient, technologically appropriate, environmentally adaptable and consumer friendly, with emphasis on quality, innovation, health promotion and respect for human dignity, and which promotes individual responsibility and community towards an enhanced quality of life."

Source: Ministry of Health Malaysia (1999), Patient Care Service Quality Assurance Programme, Quality and Standards Units, Medical Development Division, Ministry of Health Malaysia

Managing health in a third world country is not an easy task. There is a need to balance the nation's resources with allocation. Malaysia is unique in the sense that forty-four (44) percent of its population lives in rural areas where potential problems affect every aspect of peoples' lives, for example, sanitation problems, water and

electricity supply, education, health facilities and all other types of support and ancillary services. These problems tend to result in a low quality of life. Despite all of the obstacles, the government has improved peoples' lives by providing basic amenities in the rural areas. Every policy formulated by the government has considered the impact on the lives of these people. These efforts have been confirmed by the World Health Organisation (WHO) which ranks Malaysia at fifty-five (55) in the list of highly effective health facilities out of 191 countries.

Although, the Malaysian healthcare system is heterogeneous, responsibility for the population's health lies with the government. The Ministry of Health oversees the public health status of the citizens.

3.3 MALAYSIAN HEALTH SYSTEM

The government in its report (8th Malaysia Plan) stated, "The focus of health sector development will be to further improve the health status of the population, particularly the low income and the disadvantaged groups and optimise utilisation of resources in the delivery of healthcare." The Ministry is attempting to integrate planning to ensure that healthcare services have equal distribution between rural and urban areas and public and private sectors. In the light of this, the government has strengthened its implementation mechanism for effective governance of the healthcare sector.

Recently, the Malaysian healthcare sector has undergone rapid changes to accommodate the population needs of the country. This has been pointed out by the

Director-General of Health, Tan Sri Dato' Dr Abu Bakar Suleiman in his book report, *Health in Malaysia: Achievements and Challenges* (2000), " the health sector in Malaysia is undergoing considerable changes, in the country's effort to make its health care system more capable of meeting the challenges of the future." The government budget allocation shows a steady increase in the operating budget from RM (Malaysian Ringgit) 1.2 million to 3.4 million, an increase of sixty-five (65) percent over a twelve-year period. Health has been recognised as an important sector: there is an increase in the health budget from 4.3 % of GDP (1985) to 5.8% (1997). Government spending (expenditure) according to states can be seen in table 3.3

TABLE 3.1 HEALTH MINISTRY BUDGET ALLOCATION, MALAYSIA

Allocation (RM'000)	1985	1990	1995	1997
Operating budget	1,094,117.0	1,335,325.5	2,165,265.0	2,868,400.0
Development budget	162,205.3	504,996.3	427,966.0	578,538.0
Total Budget	1,256,322.3	1,840,321.0	2,598,231.0	3,446,938.0
Health as a % of national budget	*4.3*	*5.5*	*5.3*	*5.8*
% of GDP for health	*1.7*	*1.7*	*1.3*	*1.3*

Source: Laporan Tahunan Kementerian Kesihatan Malaysia 1986, 1991, 1996, 1998

The objective of healthcare systems according to the Institute of Public Health is adequacy and equity in access to a minimum of healthcare for all citizens; the cost of healthcare should not exceed an acceptable share of national resources; and the mix of services chosen should secure health outcomes and consumer satisfaction at minimum cost.

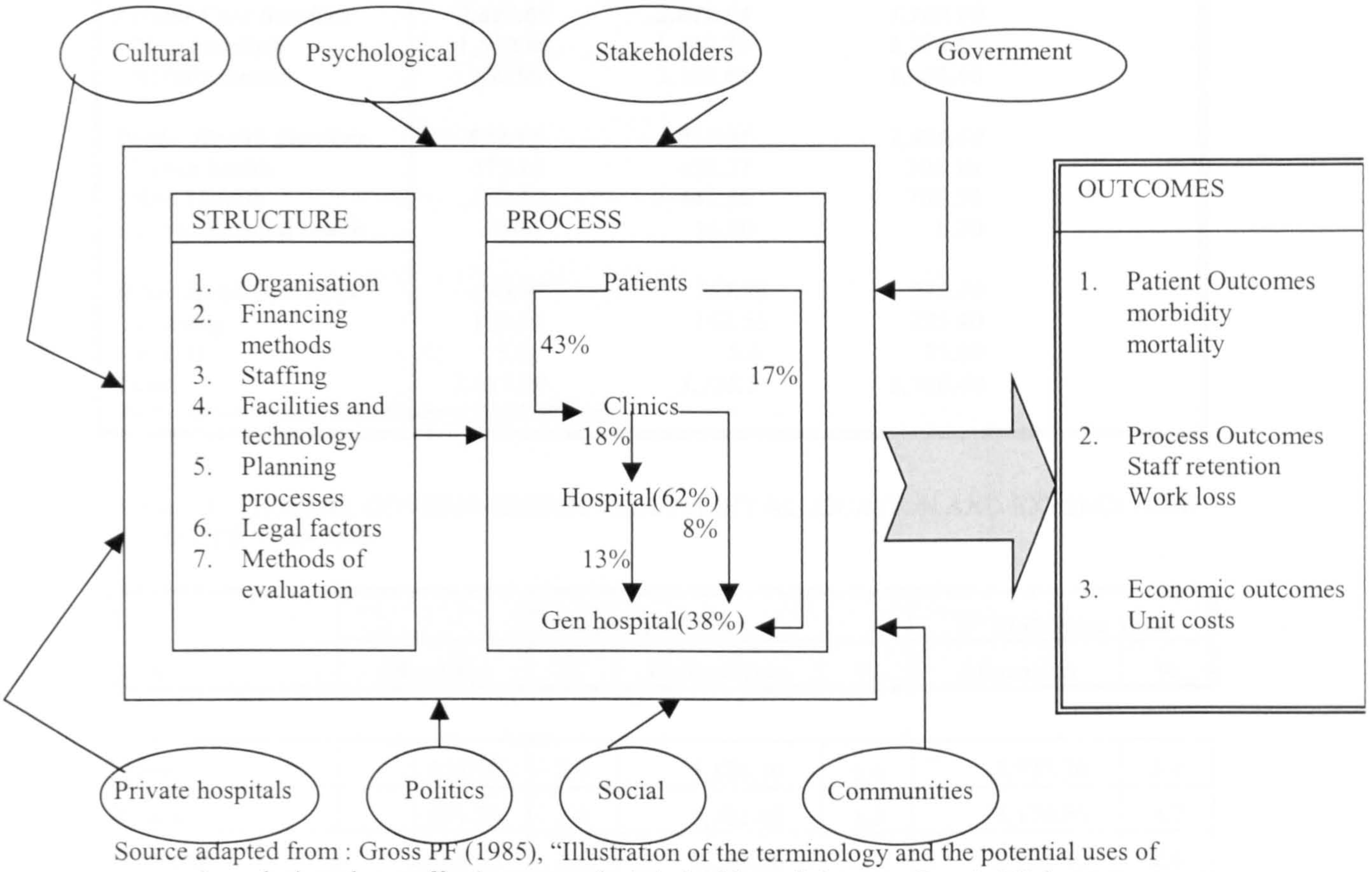
There is a growing need for continuous improvement in the health care sectors. Demographic and epidemiological changes have altered and will continue to

alter demand for the healthcare industry. These healthcare changes, also called healthcare reform, require a comprehensive view of the various players in the industry. Figure 3.1 shows an interaction of variables in the healthcare systems in Malaysia according to the Donabedian model. In brief, healthcare according to Donabedian, the father of quality in healthcare, can be classified into three (3) major components namely structure, process and outcome. Familiarity with the model will enhance understanding of how healthcare systems function in a volatile environment. This environment in turn affects health policies directly and indirectly. The model provides structured views of variables that interplay within the health systems.

It is essential for the Ministry to monitor its management of the healthcare systems in order to cope efficiently with demographic changes and manage newly emerging tropical diseases as well as re-emergence of diseases previously well-controlled. The burden of disease differs between developed and developing countries. The Ministry has to understand communicable and infectious disease epidemiology in order to find causes (etiology) and treatment (diagnosis) of the diseases. This is essential to prevent the recurrence of a world epidemic such as ebola virus or black plague. Tropical diseases treated and notified at the public hospitals are listed by states in table 3.36.

It has been noticed that if the burden of disease is high, it results in low average labour productivity (Dunlop and Martins 1995). This phenomenon can be seen from less developed countries to sustain socio-economic development because to solve the diseases which arise from society such as malaria, leprosy, tuberculosis and other pathogenic agents. The government knows that the progress of a nation is

contingent on population health. This is reflected in government expenditure by State in the Eighth Malaysian Plan.



Source adapted from : Gross PF (1985), "Illustration of the terminology and the potential uses of economic analysis and cost effectiveness analysis in healthcare", Laporan Bengkel Kebangsaan Mengintegrasikan penyelidikan system kesihatan dengan pengurusan, Institut Kesihatan Unum, Kementerian Kesihatan Malaysia.

FIGURE 3.2 SCHEMATIC VIEW OF DONABEDIAN MODEL IN MALAYSIAN HOSPITAL

The expenditure on health depends on the needs of the state. The following tables show government allocation and expenditure by programme and states.

TABLE 3.2 DEVELOPMENT ALLOCATION FOR HEALTH SERVICES 2000 (RM million)

Programme	8th MP Allocation	8th MP Expenditure	7th MP Allocation
Patient Care Services	***2,691.85***	***2,640.04***	***4,169.00***
New hospitals	1,510.86	1,447.39	2,284.60
Refurbishment	180.99	1,192.65	1,884.40
Public Health Services	***889.32***	***917.91***	***1,020.60***
Urban health	375.15	456.37	306.10
Rural health	500.17	447.54	708.30
Environmental health	14.00	14.00	6.20
Other Health Services	***155.93***	***167.55***	***310.40***
Training	150.93	162.55	285.40
R & D	5.0	5.0	25.00
Total	***3,737.10***	***3,725.5***	***5,500.00***

Source: Annual Report 1998, Ministry of Health Malaysia

Table 3.3 FEDERAL GOVERNMENT DEVELOPMENT ALLOCATION AND EXPENDITURE BY STATE, 1996-2005

State	7th Malaysian Plan Allocation	%	Expenditure	%	8th Malaysian Plan Allocation	%
Johor	5,628.70	5.4	5,556.10	5.6	5,937.30	5.4
Kedah	3,891.30	3.8	3,781.80	3.8	5,179.50	4.7
Kelantan	2,306.50	2.2	2,284.20	2.3	2,905.40	2.6
Melaka	1,628.10	1.6	1,566.20	1.6	2,464.70	2.2
Negeri Sembilan	2,268.80	2.2	2,118.90	2.1	5,221.20	4.7
Pahang	3,091.10	3.0	2,983.60	3.0	3,820.70	3.5
Perak	3,298.10	3.2	3,237.90	3.3	4,848.90	4.4
Perlis	1,275.80	1.2	1,259.70	1.3	1,581.00	1.4
Pulau Pinang	2,746.00	2.7	2,641.90	2.7	4,040.20	3.7
Sabah	6,970.20	6.7	6,933.00	7.0	7,989.70	7.3
Sarawak	5,951.00	5.7	5,928.00	6.0	8,676.30	7.9
Selangor	11,244.60	10.9	11,022.80	11.1	7,847.80	7.1
Terengganu	2,558.70	2.5	2,467.60	2.5	2,443.30	2.2
Wilayah	6,864.90	6.6	6,821.10	6.9	9,868.20	9.0
Multi-state	43,841.10	42.3	40,434.20	40.8	37,175.80	33.8
Total	***103,564.90***	***100.0***	***99,037.00***	***100.0***	***110,000.00***	***100.0***

Source: Eight Malaysian Plan, 2001

The Malaysian healthcare industry is growing at a slow pace. This is due to lack of manpower in all facilities across Malaysia. Table 3.4 below demonstrates that healthcare personnel are greatly overburdened in their workload. This overwork has created a lot of tension and deterioration of the healthcare industry image in the eyes of the public. As Jarman et al (1999) pointed out that, "There is good evidence that patient outcomes improve as the number of doctors increases". There is a critical need to acquire more clinical personnel, especially dentists and pharmacists, in the health care systems.

TABLE 3.4 HEALTH MANPOWER 1999

Health Personnel	Public	Private	Total
Total number of doctors	8,723	6,780	***15,503***
Total number of dentists	873	1,231	***2,104***
Total number of pharmacists	363	1,766	***2,129***
Total number of nurses	18,134	5,538	***23,672***
oneDoctor per population	2,604	3,350	***1,465***
one Dentist per population	25,406	18,017	***10,542***
one Pharmacist per population	61,101	12,559	***10,418***
one Nurses per population	1,223	4,005	***937***

Source: Health Fact, Ministry of Health Malaysia, February 2000

The details of manpower for healthcare can be seen from table 3.5. In comparison with equivalent figures for developed countries, the table demonstrates that more healthcare workers are needed to serve a population of twenty-two (22) million people. Due to this phenomenon, the healthcare sector is overburdened with a tremendous workload, which affects the quality of care to the patients. This difficulty of manpower shortage along with quality of care affects most third world countries. Table 3.5 shows the statistics for manpower from 1985 to 1997 according to categories of specialisations. The number shown does not match the Malaysian population, as some of the previous statistics demonstrate acute shortages of clinical

personnel in the field. The researcher observed symptoms of 'organisational lethargy' in most hospitals investigated, especially public hospitals. Hospitals are not able to cope with the overload of cases and there is a widening gap between facilities and the needs of the population, aggravated by a shortage of healthcare workers.

TABLE 3.5 HEALTH MANPOWER IN MALAYSIA

Category	1985	1990	1995	1997
Doctor	4,939	7,012	9,608	14,248
Dental Officer	1,041	1,471	1,750	1,865
Pharmacist	843	1,239	1,537	1,746
Health Inspector	879	1,007	1,425	2,052
Physiotherapy	118	170	217	233
Radiographer	280	385	422	505
Nurse	10,311	11,569	13,647	16,068
Rural Nurse	5,047	5,492	5,495	5,827
Dental Nurse	940	1,102	1,223	1,388
Dental Technician	260	337	362	424
Medical Assistan t	2,350	3,342	4,261	4,074
Pharmacist Assistant	1,330	1,567	1,879	2,162
Medical Lab Tech	879	1,370	1,698	1,784
Asst Med Lab Tech.	879	835	980	1,050

Source : Ministry of Health Malaysia Annual Report 1986, 1991, 1996, 1998

To highlight this point, load and distance analysis of health facilities have been compiled showing facilities state-by-state in relation to area and population (table 3.6). In terms of access and equity, the ratio shows improvement in some states; however, there are states at a critical point such as Sabah and Sarawak due to their rugged terrain and geographical disadvantage. These two states show low density of population and overcrowding in health facilities, ie Sabah (3,067 patients in hospitals) and Sarawak (4,446 patients in hospitals). Overall, an average of 2,000 patrons per health facility poses a serious threat to care unless measures are taken to rectify the situation.

TABLE 3.6 RATIO OF HEALTH FACILITIES TO POPULATION AND GEOGRAPHICAL AREA BY STATES 1995

State	Total number of health facilities of all types	Square km per health facilities	Population per health facility
Perlis	68	8.4	2,109
Kedah	480	15.1	2,290
Pulau Pinang	126	1.6	1,847
Perak	686	19.3	1,849
Wilayah	390	0.4	1,861
Selangor	851	6.5	2,162
Negri Sembilan	259	20.5	2,339
Melaka	205	5.9	1,963
Johor	757	17.7	2,145
Pahang	415	66.9	2,124
Terengganu	260	39.4	2,667
Kelantan	376	31.6	2,714
Sarawak	336	156.3	4,446
Sabah	292	208.1	3,067

Source: Ministry of Health Malaysia 2000

Malaysia has gained recognition from the World Health Organisation (WHO) for its improvement in healthcare services, in terms of accessibility and equity of health to the population. The Director of Medical Practice, Ministry of Health Malaysia, in a recent interview said, " Malaysian health status has reached the level of a developed nation even though Malaysia in general is still developing." This commendation was given thanks to Malaysian efforts in providing rural areas (44%) basic necessities and amenities to improve the quality of life. Moreover, rural areas with low population density have been provided with an extensive network of health facilities such as health centres, klinik Desa and other private practices. Table 3.7 and table 3.8 shows that forty-four (44) percent of the Malaysian population live in rural areas with a relatively low health allocation and health infrastructure.

TABLE 3.7 URBAN VERSUS RURAL POPULATION IN MALAYSIA

Population	1970	1980	1991	1997
Total pop	10,439,430	13,745,200	18,379,700	21,665,900
Urban (%)	26.8	34.4	51.0	56.5
Rural (%)	73.2	65.6	49.0	43.5

Moreover, section 3.8 shows more detailed statistics of Malaysia as compared to rest of the world. The Ministry of Health as well as other non-governmental units, are collectively trying to improve population health by focussing on government programmes for rural health. Table 3.8 shows the number of health and desa clinics by states. Table 3.34 highlights Malaysian rural healthcare compared to other nations in terms of amenities provided to the rural population. As one of the directors in a public hospital puts it, " government is not in the business of making money, but to serve the population at whatever cost." This is in fact what the government is doing, taking on social responsibilities, as most government hospitals are heavily subsidised, as can be seen from case studies in this thesis. Figure 3.2 illustrates the channel of communication between health agencies in Malaysia, which has been practised by the government only since they have coordinated health matters across organisations.

TABLE 3.8 NUMBER OF HEALTH AND DESA CLINICS BY STATE 1998

State	Health clinics	Klinik Desa
Johor	87	271
Kedah	54	224
Kelantan	59	202
Melaka	27	63
Negeri Sembilan	39	105
Pahang	65	228
Perak	83	254
Perlis	9	29
Pulau Pinang	27	61
Sabah	90	190
Sarawak	119	97
Selangor	58	136
Terengganu	41	132
Wilayah	14	-
Malaysia	**772**	**1,992**

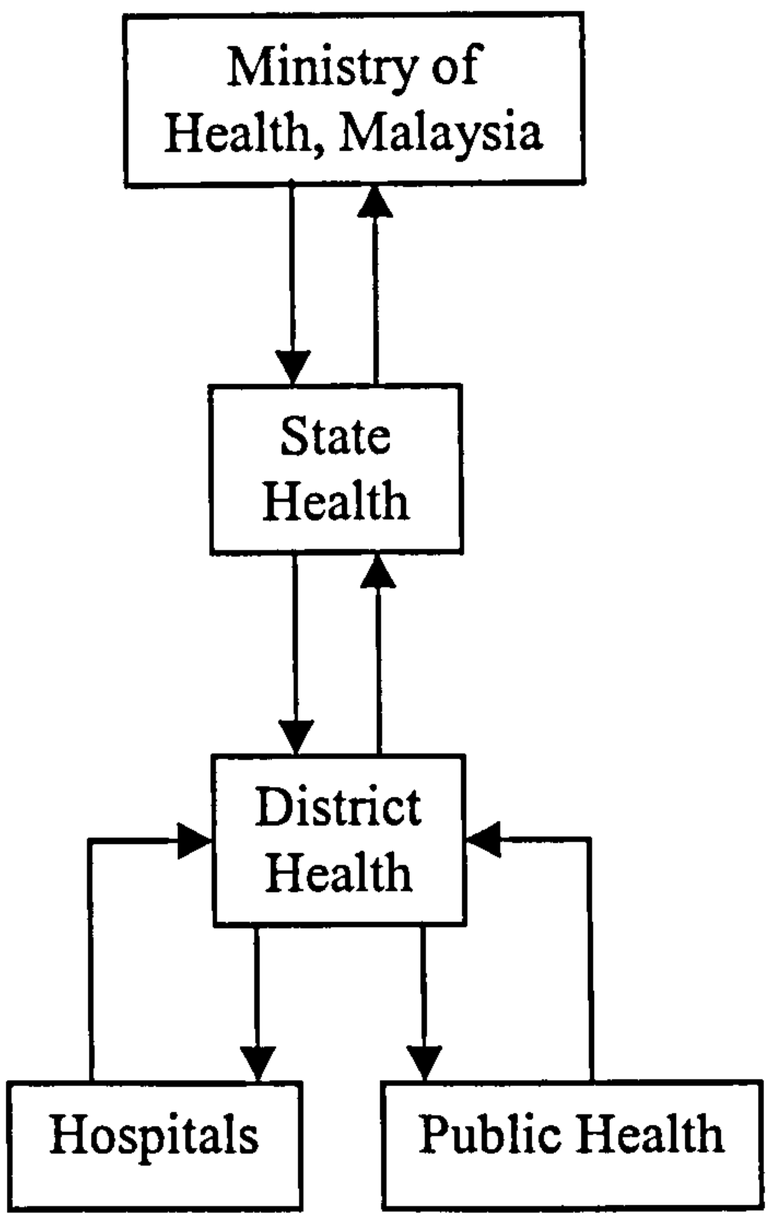
Source: Annual report 1998, Ministry of Health Malaysia

TABLE 3.9 GOVERNMENT HOSPITALS AND SPECIAL MEDICAL INSTITUTION BY STATE 1998

State	Hospital		Mental		Leprosy		Tuberculosis		Total	
	number	beds	Number	beds	number	beds	number	beds	number	beds
Johor	10	2,668	1	2,080					1	2,080
Kedah	9	2,050								
Kelantan	8	1,519								
Melaka	2	835								
Negeri Sembilan	5	1,345								
Pahang	9	1,609								
Perak	14	3,464	1	2,600					1	2,600
Perlis	1	404								
Pulau Pinang	5	2,023								
Sabah	16	2,769	1	302					1	302
Sarawak	19	2,997	1	338	1	20			2	358
Selangor	6	1,569			1	836			1	836

Terengganu	5	1,182								
Wilayah	2	2,612					1	116	1	116
Malaysia	**111**	**27,046**	**4**	**5,320**	**2**	**856**	**1**	**116**	**7**	**6,292**

Source: Annual report 1998, Ministry of Health Malaysia



Adapted from: Annual Report 1998, Ministry of Health, Malaysia

FIGURE 3.3 CHANNEL OF COMMUNICATIONS

3.4 PROGRESS IN THE HEALTHCARE SECTOR

Healthcare provision in Malaysia consists of primary, secondary and tertiary care through a network of health clinics, Klinik Desa (rural), mobile clinics and hospitals. A comprehensive healthcare system can be viewed in figure 3.3. The following are activities/programmes that the government have recently completed.

This is taken from various sources, eg Eighth Malaysia Plan, Annual Report, Case Studies conducted and other secondary data.

1. In the Eighth Malaysia Plan, a total of thirty-three (33) hospital projects were approved (see table 3.13), this is inclusive of the IT-based specialist hospital in Selayang (Selangor) and Putrajaya (Wilayah). Eight more multimedia hospitals are to be built in 2002. (New Strait Times, 09 June 2001). These are the only multimedia hospitals in the healthcare system that will fully utilise information technology. At the moment it is operating at a half capacity and is still at the pilot stage.

2. The Ministry of Health is also introducing Total Hospital Information Systems (THIS) to six (6) regional hospitals, namely Ampang (Wilayah), Serdang (Selangor), Sungai Buloh (Selangor), Alor Setar (Kedah), Sungai Petani (Kedah) and Pandan (Johor). A small hospital in Sabah and Sarawak is incorporating Health Information Systems (HIS). THIS is still at the pilot stage.

3. Refurbishment of eleven (11) hospitals to promote better healthcare with clinical support facilities. Diagnostic and support facilities were further improved, services include imaging, pathology and haematology.

4. Establishment of a National Blood Center, in Kuala Lumpur in 2000, in order to upgrade Blood Transfusion Units in all hospitals throughout the country.

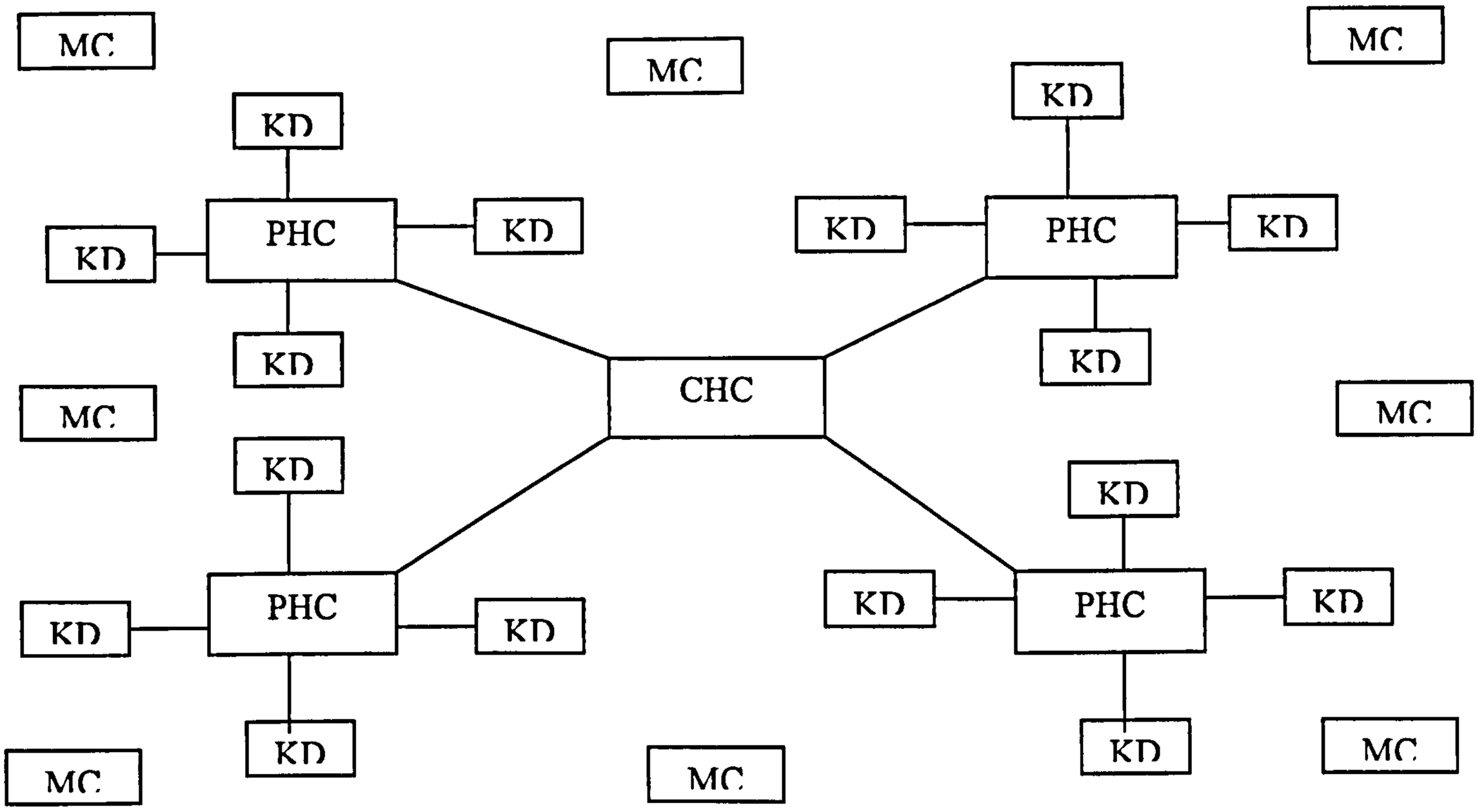
5. Acquisition of Bone Densitometer in Hospital Pulau Pinang; Magnetic Resonance Imaging (MRI) machine in Kuala Lumpur, Ipoh (Perak), Johor Bahru (Johor)and Selayang (Selangor); nineteen (19) computerised tomography (CT) scanners in all state hospitals, as well as fourteen (14) units of mammography equipment were installed in selected hospitals such as in Muar (Johor), Sibu (Sarawak) and Taiping (Perak). Moreover, technology acquisition will be coordinated with the private sector so that better coverage of technology will improve the service to the population. There are plans for technology sharing between sectors in the near future. This has wide implications for policy and cost saving in the healthcare sector in general.

6. The government is concentrating on providing basic healthcare to the rural areas, which includes construction of new primary healthcare clinics, and upgrading of community and midwife clinics into health clinics. It has also commissioned basic imaging and laboratory diagnostic facilities and teleprimary IT systems. One hundred and seventy-two (172) health facilities were involved in this. The Ministry also provides mobile dispensaries to the remote areas. These efforts have been recognised by WHO as 'creative innovation". Figure 3.5 shows a relational map of the healthcare system in Malaysia in respect to servicing the rural areas.

7. To provide better services in an efficient and effective manner, the government have successfully privatised five (5) support services in 1996. These services were hospital cleansing, clinical waste management, bio-

medical equipment maintenance facility, maintenance as well as linen and laundry services.

8. Table 3.17 shows that the private healthcare sector is expanding. This expansion is mainly in the urban areas (97.8 percent). In addition, these hospitals provide secondary and tertiary care to the population, with the latest diagnostic and imaging facilities. According to the 1999 annual report, the private sector held 23 out of 27 units of MRI equipment, 67 out of 86 CT Scanners, 67 percent of physicians, 66 percent of surgeons and 80 percent of obstetricians and gynaecologists. This has created an unequal distribution in the medical services and difficult access for communities in the rural areas. In response to this situation, the government enacted the Private Healthcare Facilities and Services Act 1998, to correct the imbalance in "standards and quality of care as well as rationalise medical charges in the private health sector to more affordable levels". This marked a revolution for the healthcare industry in Malaysia, since it was the first time that the private healthcare sector was given a major share of responsibilities in servicing the population.



Notes: CHC – Comprehensive health centres; PHC – Primary health centres; KD – Klinik Desa; and MC – Mobile clinics

Source: Adapted from Gesler W (1984), "Healthcare in Developing Countries.", Association of Geographers.

FIGURE 3.5 COMPREHENSIVE VIEW OF MALAYSIAN HEALTH SYSTEM (3-TIER SYSTEM)

3.5 CHARACTERISTICS OF HEALTHCARE SYSTEM

Healthcare systems differ from one country to another. Understanding the characteristics of a healthcare system is crucial in determining its success in a particular country. The Malaysian healthcare system encompasses the following components.

3.5.1 Equity

To provide effective health care services with no limitation on cost is impossible. Equity is the most controversial aspect of health care in any countries. It

gives rise to heated debates about healthcare management and the issues relating to it differ between developed and developing countries. Clewer and Pierkins (1998) defined equity as equal level of access to the healthcare services. This sounds simple but is difficult to implement. Kogan and Redfern (1995) defined equity as a fair share for the whole community (including minority and disadvantaged groups).

3.5.2 Efficiency

Efficiency in health services means providing services at minimal cost. With improved efficiency organisations can utilise resources with discretion and thus reduce and even eliminate wastage. The health managers must be knowledgeable in balancing the requirements of the organisations. Understanding healthcare systems helps in speeding up services rendered to the patients. The Joint Commission (1997) defined efficiency as, "the relationship between the outcomes (results of care) and the resources used to deliver patient care."

3.5.3 Effectiveness

Effectiveness has to do with output. Output of health services can be classified into two (2) areas: intermediate output, ie number of patients treated, and final output (or outcome), ie overall benefits of patients brought about by different methods of treatment. The Joint Commission's definition is "the degree to which the care is provided in the correct manner, given the current state of knowledge, to achieve the desired or projected outcome(s) for the patients."

3.5.4 Access

Access means the ability to utilise health facilities. This accessibility should be given to the population as health is a public good, the right of the population. Deprivation may create an unhealthy society and the nations will not progress as other developed countries. It is a prerequisite for a developed nation. Kogan and Redfern (1995) defined access as time, distance (geographical), financial and informational access being within accepted norms. According to Professor Chen of Universiti Malaya in his report on the national workshop on the integration of health systems research and management in 1985, access can be classified into three main areas, namely physical access, economic access and social and cultural access. Physical accessibility is influenced by distance measured in miles/kilometres; barriers of communication such as mountains, forests, rapids and non-navigable shallow rivers; transportation facilities and arteries such as availability of highways, roads, tracks, railways, public buses, taxis etc; types of healthcare resources for example, "it is well known that the public are prepared to travel only relatively short distances for preventive care (ie 3 km) but will travel greater distances to health centres with both preventive and curative services, and will travel much further for sophisticated services such as hospitals (ie more than 30 km in Sabah/Sarawak)"; and time spent travelling. Other than physical accessibility, income is used to determine the ability to use the facilities. This is called economic accessibility. Social and cultural accessibility refers to language, religious beliefs and social class, which sometimes act as barriers to healthcare facilities. For example, the Orang Asli group (Malaysian aboriginals) prefer Gombak Hospital because this hospital caters for the

specific ethnic group. In addition, high-risk mothers in Kelantan avoid hospital delivery despite all the advice from health authorities.

3.5.5 Appropriateness

Appropriateness refers to proper usage and suitable resources for healthcare provision. There must be a match to eliminate wastage in trying to service the population. The Joint Commission defines appropriateness as, "the degree to which the care provided is relevant to the patients' clinical needs, given the current state of knowledge."

3.5.6 Responsiveness

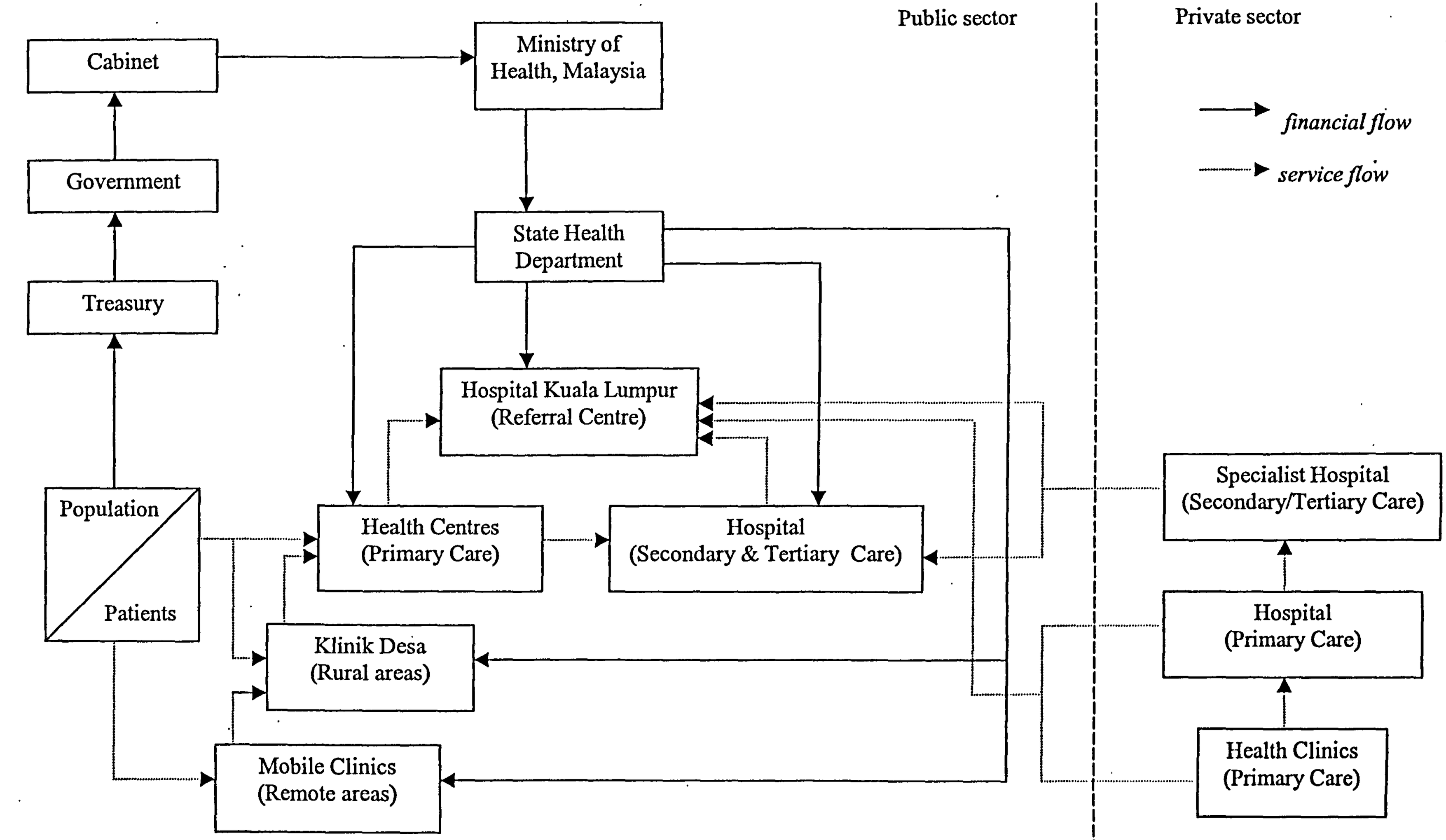
Responsiveness consists in meeting the needs and demands of the population. The Malaysian healthcare system must be responsive in order to be sensitive to the population needs.

3.6 HEALTH FACILITIES

There is a mixture of public and private sector health facilities. Health is service as a population-based medicine. Therefore, equity in healthcare has to be distributed according to geographical constraint. Table 3.10 shows that the government is heading towards this direction.

Table 3.11, shows an increase in number of admissions in all facilities in Malaysia since 1970. These increases have encourage the government to formulate a more prudent healthcare policy to accommodate the Malaysian population. Every

FIGURE 3.3 FINANCIAL AND SERVICE FLOW OF MALAYSIAN HEALTHCARE SYSTEM



Compile by researcher(Source: Interviews)

state in Malaysia has experienced this increase in inpatient as well as outpatient admissions.

TABLE 3.10 OUTPATIENT ATTENDANCES (HOSPITAL & HEALTH) BY STATE

State	1997	1998	% Increase or decrease
Perlis	414,801	429,978	3.66
Kedah	1,888,459	1,990,466	5.40
Pulau Pinang	1,482,906	1,586,939	7.02
Perak	3,048,030	3,155,074	3.51
Selangor	1,972,718	2,045,871	3.71
Wilayah	1,415,727	1,457,684	2.96
Negeri Sembilan	1,197,145	1,244,103	3.92
Melaka	835,784	871,462	4.27
Johor	2,457,853	2,601,920	5.86
Pahang	1,584,366	1,679,076	5.98
Terengganu	1,136,583	1,235,423	8.70
Kelantan	1,804,102	1,870,411	3.68
Sabah	3,454,712	3,574,734	3.47
Sarawak	2,957,618	3,080,008	4.14
Medical Institutions	209,043	215,717	3.19
Total	**25,859,847**	**27,038,866**	**4.56**

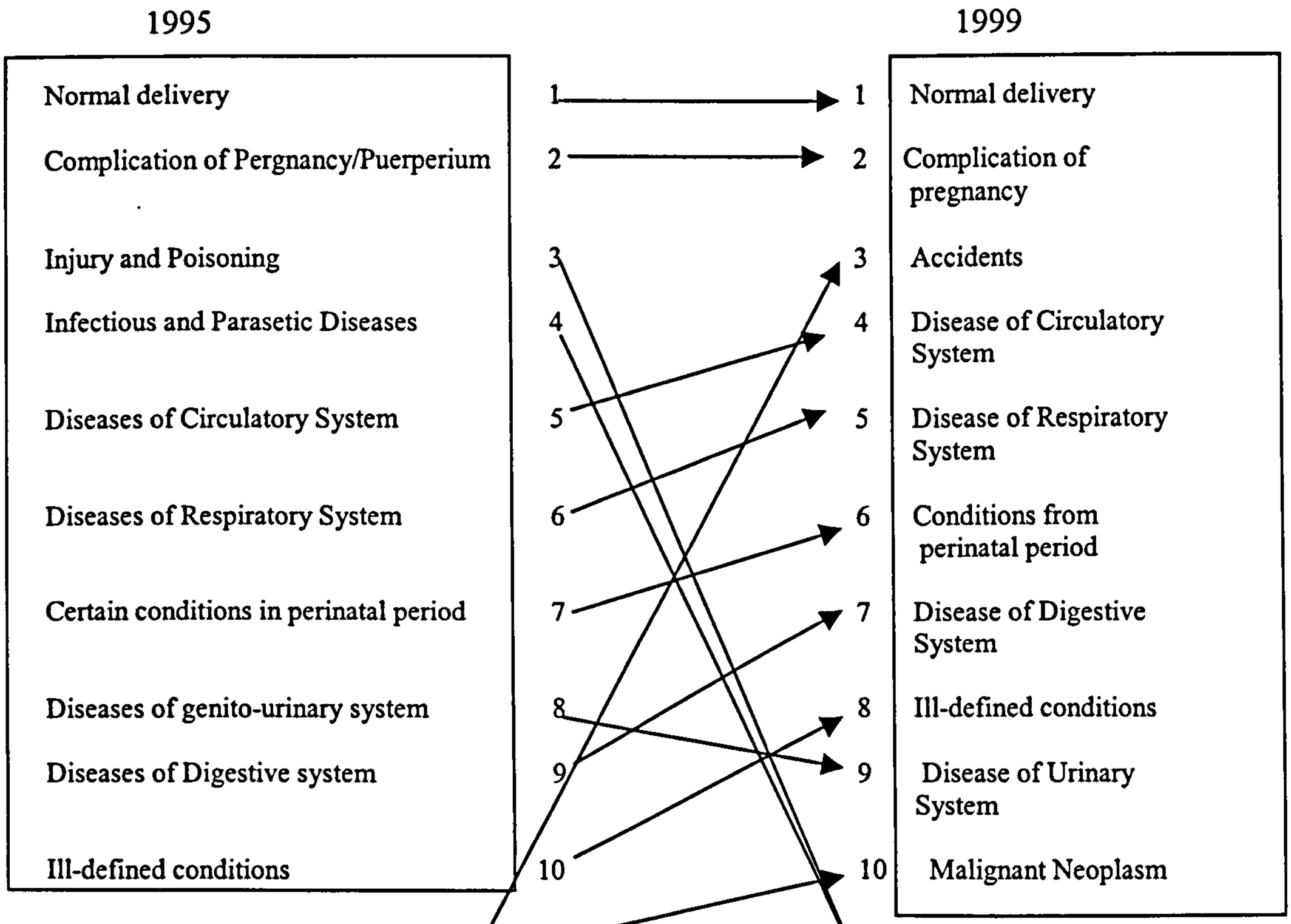
Source: Information & Documentation System Unit, Ministry of Health Malaysia

Figure 3.6 shows pattern of hospitalisation and death (mortality) change over time. This epidemiology data is crucial for the government to incorporate into their strategic planning process. Manpower aspects need to be considered as well as health facilities to accommodate changes in population health. Also, table 3.12 shows the number of communicable diseases treated and notified by type of disease and state. This disease pattern has been closely monitored by the Ministry to check endemity (prevalence) of the disease in the population.

TABLE 3.11 UTILISATION OF HOSPITALS –ADMISSIONS PER 1,000 POPULATION BY STATE

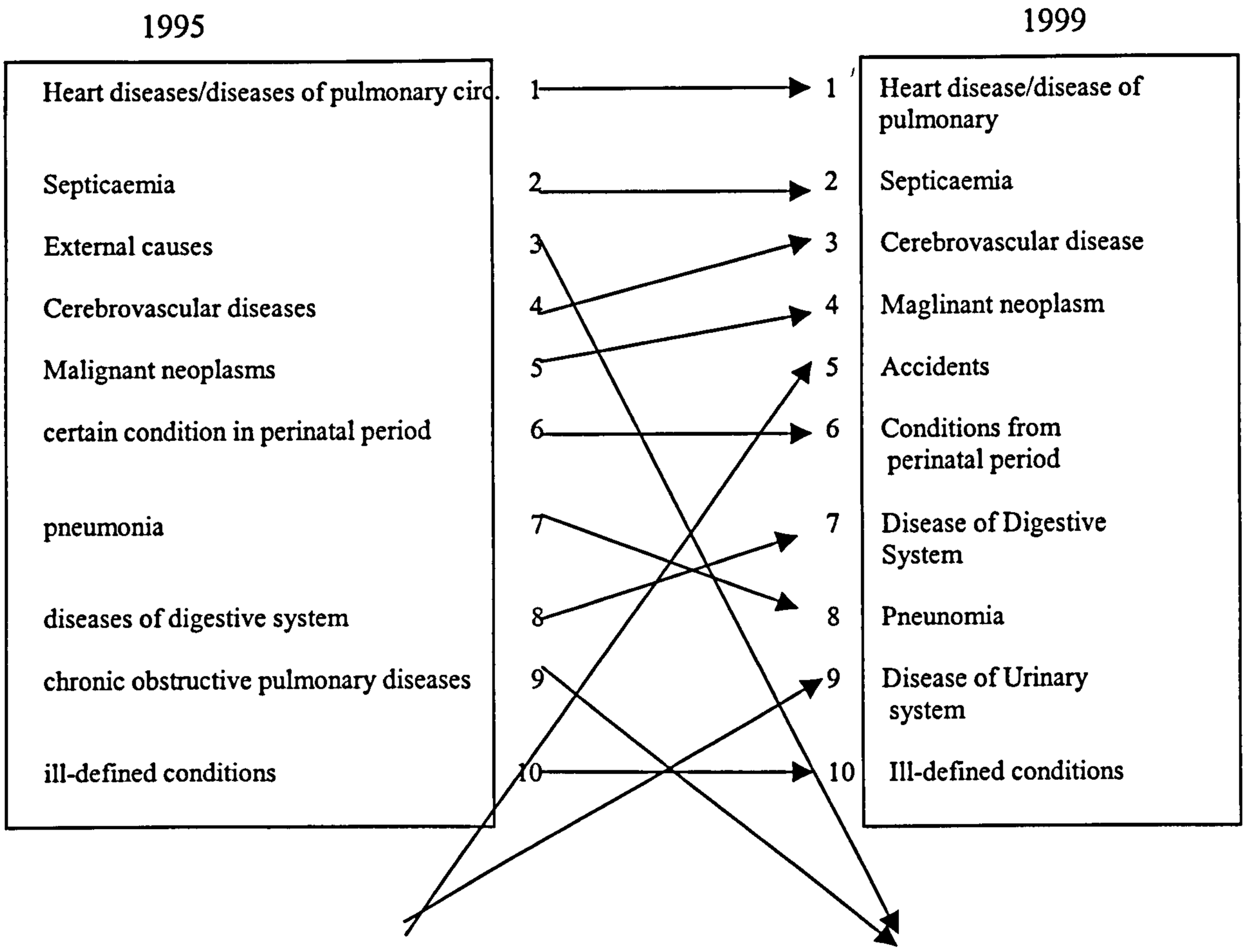
	1970 ←(26 years changes)→ 1996				
	No of admission	Admission rate	No of admission	Admission rate	inc
Perlis	6,099	61.8	20,623	96.7	35.0
Kedah	26,170	34.3	120,403	80.0	45.6
Pulau Pinang	37,636	60.3	88,799	73.4	13.1
Perak	57,907	43.1	169,494	81.4	38.3
Selangor	51,129	45.7	269,900	63.2	13.8
Negri Sembilan	31,146	76.4	69,498	88.8	4.5
Melaka	12,775	39.5	42,608	73.9	34.4
Johor	45,843	44.7	175,249	70.2	25.5
Pahang	19,290	56.2	90,894	74.9	18.6
Terengganu	7,611	24.8	65,435	69.0	44.2
Kelantan	9,032	16.3	77,876	55.2	38.9
Total	**304,638**	**44.1**	**1,190,779**	**71.2**	**26.8**

Source: Ministry of Health Annual Report, 1971 and 1996



Source: Kementerian Kesihatan Malaysia (1995), Lapuran Tahunan, Jabatan Percetakan Malaysia, Kuala Lumpur, Malaysia.
Kementerian Kesihatan Malaysia (1999), Lapuran Tahunan, Jabatan Percetakan Malaysia, Kuala Lumpur, Malaysia.

FIGURE 3.6 CAUSES OF HOSPITALISATION



Source: Kementerian Kesihatan Malaysia (1995), Lapuran Tahunan, Jabatan Percetakan Malaysia, Kuala Lumpur, Malaysia.
Kementerian Kesihatan Malaysia (1999), Lapuran Tahunan, Jabatan Percetakan Malaysia, Kuala Lumpur, Malaysia.

FIGURE 3.7 CAUSES OF DEATH

TABLE 3.13 HOSPITALS BEDS PER POPULATION, MALAYSIA

Year	Acute hospital beds per 1000 population	Beds to population ratio
1985	1.37	1:482
1990	1.3	1:531
1995	1.18	1:477
1997	1.15	1:478

Source: Ministry of Health Annual Report:

TABLE 3.12 NUMBER OF COMMUNICABLE DISEASES CASES TREATED BY TYPES AND STATE, MALAYSIA 1998

Diseases	Johor	Kedah	Kelantan	Melaka	N.Sembilan	Pahang	Perak	Perlis	P.Pinang	Sabah	Sarawak	Selangor	T'gganu	W'yah	M'sia
Cholera	1	-		1	4	4	10		1	184	117	28		41	391
Typhoid & Paratyphoid	5	36	274	5	2	29	32	9	7	255	63	5	62	52	836
Dysentry (all types)	10	15	1	2		1	4		1	5	31	2	13	1	86
Food poisoning	683	1,688	535	280	151	817	546	32	262	307	1,202	593	780	90	7,966
Tuberculosis (all types)	984	710	764	215	310	560	972	122	816	3,792	1,712	570	445	1,563	13,535
Plague	-														
Leprosy	20	9	29	3	2	17	12	2	15	69	27	19	8	45	277
Diphteria	-									2					2
Whooping cough	-						2				1	1			3
Tetanus (all types)	-							1	1	21	1				28
Poliomyletis (acute)	-														
Viral encephalitus	1			1			1			1	7			1	12
Measles	10	4	34	5	20	4	2		44	269	90	9	27	47	565
Yellow fever															
Dengue fever	1,625	509	461	384	944	702	972	36	751	304	619	4,795	518	6,022	18,642
Dengue haemorraging fever	168	23	124	7	37	10	35	3	89	13	46	124	42	66	787
Viral hepatitis	19	29	149	14	46	72	53	3	22	80	17	35	189	28	756
Rabies		7													7
Typhus	1							1	55		12		14		83
Malaria	222	24	452	34	104	3,211	904		19	18,998	2,510	105	52	13	26,649
Relapsing fever								8							
Syphillis (all types)	160	18	12	26	26	42	43	1	152	165	414	24	23	204	1,317
Gonococcol infection	21	2	1	25	1	2	7		37	291	874	10		121	1,393
Chancroid															
Other venereal disease	481	599	340	121	172	492	633	20	533	223	1,152	430	236	567	5,999
HIV	647	269	288	195	318	429	362	47	215	15	11	527	357	238	3,918
AIDS	148	17	19	7	38	29	72	14	27	3	7	26	12	107	526

All the statistics presented in this thesis show that health facilities in Malaysia have problems of under capacity (overcrowding). The researcher's experience, as a native, using facilities in Malaysia and the experience of others confirms this. It is also confirmed by the bed to population ratio of 478. This ratio is worse for facilities in Sabah and Sarawak. Tables 3.5, 3.6, and 3.14 show health facilities workload according to states. In view of this, the government have successfully planned facilities across the nation in its seventh and eighth Malaysia Plan. Table 3.13 shows projects that have been approved and that are in the midst of construction in 2001.

TABLE 3.14 LIST OF HOSPITAL PROJECTS APPROVED DURING THE SEVENTH PLAN PERIOD

State	Hospital	No of beds	Scope of care
Johor	Pandan	704	Full secondary care with tertiary care
	Tampoi	1,228	Psychiatric care
		1,932	
Kedah	Alor Setar	600	Full secondary care with tertiary care
	Sungai Petani	498	Full secondary care
	Sungai Petani	400	Psychiatric care
		1,498	
Kelantan	Jeli (phase 1)	24	primary care
		24	
Melaka	Jasin	76	Basic secondary care
		76	
Negeri Sembilan	Jempol	108	Basic secondary care
		108	
Pahang	Cameron Highlands	76	Basic secondary care
	Temerloh	490	Full secondary care
	Pekan	108	Basic secondary care
		674	
Perak	Slim River	246	Full secondary care
		246	
Pulau Pinang	Kepala Batas	108	Basic secondary care
		108	

Sabah	Keningau	200	Full secondary care
	Kunak	76	Basic secondary care
	Kuala Penyu	76	Basic secondary care
	Lahad Datu	268	Full secondary care
	Nabawan	76	Basic secondary care
	Pitas	76	Basic secondary care
			772
Sarawak	Belaga	76	Basic secondary care
	Bintulu	298	Full secondary care
	Dalat (phase 1)	8	Primary care
	Lawas	108	Basic secondary care
	Sri Aman	268	Full secondary care
	Sarikei	268	Full secondary care
			1,026
Selangor	Ampang	562	Full secondary care with tertiary care
	Cheras	150	Rehabilitative & Geriartric care
	Selayang	960	Full secondary care with tertiary care
	Serdang	620	Full secondary care with tertiary care
	Shah Alam	500	Tertiary care
	Sungai Buloh	620	Full secondary care with tertiary care
			3,412
Terengganu	Setiu	76	Basic secondary care
			76
Wilayah	Putrajaya	250	Full secondary care
Total		*10,202*	*250*

Notes:

Primary care services comprise of outpatient department as the first point of contact, including maternal child healthcare, dental services, school health services and support services such as clinical and imaging facilities, pharmacy and registration

Basic secondary care services comprise of General Medicine, General Surgery, Obstretics & Gynaecology, and Paediatrics. The services are run by resident medical officer and visiting specialist.

Full secondary care services comprise of General Medicine, General Surgery, Obstretics & Gynaecology, Paediatrics, Orthopaedics, Anaethesiology, Psychiatry, Dermatology, Medical Rehabilitation, Pathology, Imaging, Dental, ENT, Ophtalmology & Geriartric. The services are run by medical officers and resident specialist.

Tertiary care services are highly specialised care in areas such as Cardiology, cardiothoracic Surgery, Geriatrics, Paediatrics Surgery, Neurology, Neurosurgery, Respiratory Medicine, Urology & Nephrology, Plastic Surgery, and Burns, Maxilofacial, Haematology, Radiotherapy and Oncology, and Endocrinology.

TABLE 3.15 HEALTH FACILITIES PROJECTS & DEVELOPMENT ALLOCATIONS

Project Detail	Facilities	Number of Project	Allocation (RM Million)	Percentage Allocation
1	Training	45	145,337.00	5.1
2	Public Health	1074	729,372.00	25.59
3	Health Facility	186	756,538.00	26.55
4	Hospital	56	1,016,713.00	35.67
5	Feasibility Study	1	2,000.00	0.07
6	Upgrading & Maintenance	1	200,000.00	7.02

Source : Annual Report 1998, Ministry of Health, Malaysia

Table 3.15 shows that 36% of allocation of projects are committed to hospitals and 27% to health facilities. These give a total of 63% dedicated resources to patient services nationwide, which demonstrates a serious effort by the government to improve health over the long run.

3.7 THE ROLE OF PUBLIC AND PRIVATE SECTORS IN MALAYSIA

The Ministry has successfully implemented a policy to stimulate growth among clinical workers especially doctors. This can be seen from 1970 to 1997, where doctors to population ratio reduced gradually from 4,105 to 1,521, a reduction of almost two-hundred (200) percent over 27 years (see table 3.11). The Ministry is still battling to close the gaps among states and penetrate rural areas for better access and equity among populations.

The emergence of private health care has forced the government to reconsider its role as the primary healthcare provider. The government has shifted its role from curative health care to preventive health care. The two-tier system (public and private) has to be integrated as well as coordinated so that redundancy of services

can be eliminated. The overlap of services of these sectors creates inefficiency in the health system. The government has recently passed the 'Akta Hospital-Hospital Swasta 1998'. This 'Akta' (a Malay word for an Act passed by parliament) has been tabled in a Cabinet meeting and is waiting to be gazetted into a government publication. It was enacted to control private sector activities as well as distribution of health facilities across Malaysia. The government is serious in its intention to provide health to every corner of the country by giving more responsibilities to the private sector. Sharing accountability for access and equity is the main agenda of the government in regard to the private health provider.

It is the intention of the government to provide the best service at a lower cost. This is apparent from its strategy. Among other things, the health system proposed by the government envisages a system that is:

- Affordable – healthcare costs should be within the means of the country and the healthcare financing systems that exists, but should also take into consideration individual access to health and health related services.

- Equitable – each individual, regardless of socio-economic status, age, race, religion or gender, shall be provided with basic healthcare of an acceptable standard.

- Efficient – the health services should be effective, appropriate and result in good outcomes.

- Technologically appropriate – interventions in healthcare should be suitable for the purpose, time, place and cost as well as appropriate for observed priorities in health.

- Environmentally adoptable – the health systems should be flexible and have the ability to respond to changes in the physical and socio-economic environment.

- Consumer friendly – the 'client' should be the focus at the centre of every health endeavour, in order to make the service easy to use. In future, client-driven healthcare may be the aim.

- Strong on quality, innovation, and health promotion – criteria to meet the changing demands and expectation of the population, and these must be optimised to further enhance the health status of Malaysians.

- Promoting individual responsibility and community participation – basic principles of healthcare that stress the fact that health does not entirely depend on health services alone. There are also socio-economic and other significant determinants, such as people's responsibility for their own health and opportunities available to participate in their own care.

These objectives listed above are difficult to achieve since public health is a social entity. For example to be equitable as well as efficient is almost impossible. To be at the forefront of technology and at the same time affordable is difficult to

achieve. There is a trade-off that the government has to consider in their decision making. It is a hard choice because it affects government spending as well as government allocation. It is difficult to achieve because as a third world country, Malaysia is not without social problems, including poverty.

Table 3.16 illustrates the poverty level of the Malaysian population. Poverty is a social disease that affects third world countries and Malaysia is not exempted. The government is trying to eradicate poverty gradually by raising the per capita income of each household in Malaysia. Table 3.16, shows a high poverty incidence in the East Coast region, Kelantan, Kedah, Terengganu and Perlis. The government has assisted the poorer states to increase their socio-economic status and a marked improvement can be seen from this table.

TABLE 3.16 INCIDENCE LEVEL OF POVERTY IN MALAYSIA FROM 1976-1990

STATE	YEAR		%
	1976	1990	Change
Kelantan	67.10	29.90	-55.44%
Kedah	61.00	30.00	-50.82%
Terengganu	60.30	31.20	-48.26%
Perlis	59.80	17.20	-71.24%
Sabah	58.30	34.30	-41.17%
Sarawak	56.50	21.00	-62.83%
Perak	43.00	19.30	-55.12%
Pahang	38.90	10.30	-73.52%
Negri Sembilan	33.00	9.50	-71.21%
Pulau Pinang	32.40	8.90	-72.53%
Melaka	32.40	12.40	-61.73%
Johor	29.00	10.10	-65.17%
Selangor	22.90	7.80	-65.94%
Wilayah	9.00	3.80	-57.78%

Source: The Second Outline Perspective Plan 1991-2000

The government in its eighth Malaysia Plan continues to battle to eradicate poverty, to narrow income inequality, and to improve access to all health facilities in Malaysia, including tertiary care which so far has provided healthcare only for those who can afford it. The government is trying to change the scenario to reflect a caring society. Everybody should have access regardless of their socio-economic status. This has been explicitly highlighted by the Director-General of Health, Tan Sri Dato' Abu Bakar Suleiman to all healthcare providers.

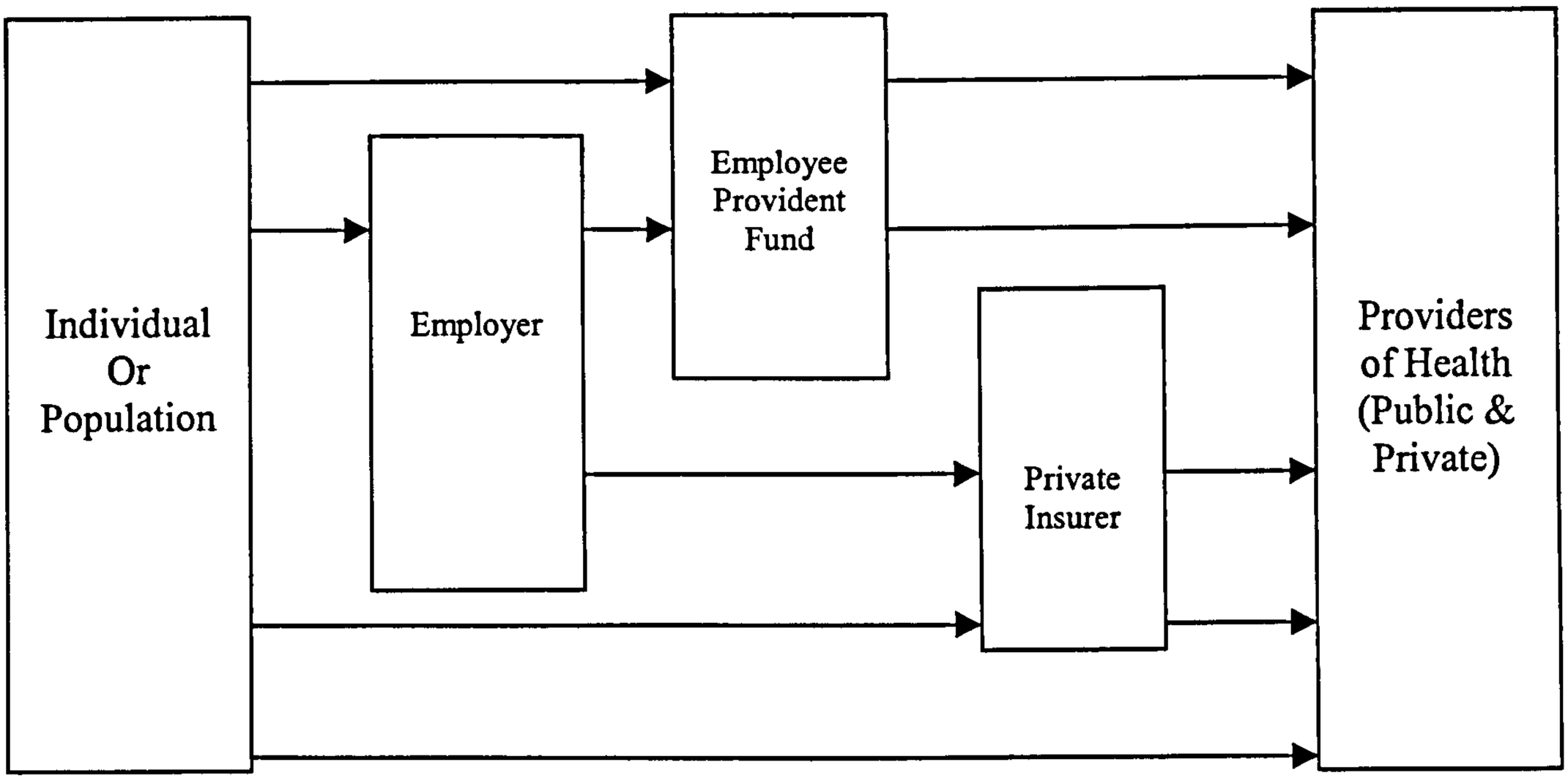
3.5.7 Public Sector Role

The government plays a major role in shaping healthcare in the public sector. Table 3.16 shows utilisation of health facilities in government hospitals. All indicators show an improvement. Government strategy is directed at reducing operational costs for medical services and focusing more on preventive medicine, ie public health, which has long-term effects on the population at large. The private sector will now play a curative role to alleviate the burden of the government. The government has subsidised the population with ninety-five (95) percent of healthcare services, only five (5) percent of costs are passed on to the population. These heavily subsidised schemes have created governmental inefficiency in terms of abuse of health facilities. From the case studies, cost classification is crude, for example revenue is not classified by department but shown as a lump sum. Because of this practice, it is difficult to focus in on the problems. Figure 3.8 shows sharing of responsibilities between public and private sectors in terms of healthcare financing.

TABLE 3.17 SUMMARY OF UTILISATION OF INPATIENT AND OUTPATIENT SERVICES IN GOVERNMENT HOSPITALS, MALAYSIA

Summary	1985	1990	1995	1997
Bed complement	32,495	33,400	33,628	33,918
Daily avg no. of admissions	2,928	3,582	4,015	4,272
Bed occupancy rate (%)	66.7	65	61.1	62.1
Avg length of stay in days	7.5	6.1	5.1	4.9
Turnover intervals in days	3.8	3.3	3.4	3
Daily avg no. of outpatients	31,564	45,171	47,183	45,698
Ratio of admissions to total patients	1:11	1:10	1:09	1:09

FIGURE 3.8 MALAYSIAN HEALTHCARE FINANCING



Source: Compile by Researcher (interviews)

3.5.8 Private Sector Role

It is only recently that, private practices emerged in the Malaysian healthcare systems. Private hospitals are widespread across nation, especially in the capital city, Kuala Lumpur, as shown in the statistical tables. Because of the mushrooming of

private practices, the government has lost control of some aspects of health pertaining to private practices. Recently, laws have been passed to ensure that the population gets quality care, in the form of the Healthcare Facilities and Services Act 1998 which aims to ensure improvement in quality of healthcare and equal distribution in the private healthcare sector. The Act entails provision for equitable distribution of accredited facilities, deployment of qualified health and allied health professionals, and maintenance of affordable medical charges.

After years of experience, the government has decided that the responsibilities of providing health to the population must be shared between the public and private sectors. The public entity will now serve the poor while private serve the affluent population. In this manner, better coverage could be accomplished to achieve Malaysia's aspiration.

The healthcare sector is becoming a profitable operation. This can be seen from growth of private hospitals in Kuala Lumpur, Pulau Pinang, Melaka and other parts of Malaysia. This growth in the industry is attributable to the increase in per capita income. The quality of services in government hospitals decline because of unskilled labour and a high labour turnover. All of these factors have caused private hospitals to thrive in the healthcare market.

TABLE 3.18 BED COMPLEMENT IN LICENSED PRIVATE HOSPITALS IN MALAYSIA 1998

State	No. of Private Hospitals	No. of Beds
Perlis	Nil	Nil
Kedah	12	347
Penang	22	1,514
Perak	14	328

Selangor	41	2,212
Wilayah	45	4,237
Negeri Sembilan	7	123
Melaka	10	989
Johor	36	772
Pahang	8	143
Terengganu	2	17
Kelantan	4	1,211
Sabah	11	220
Sarawak	10	344
Malaysia	**216**	**12,457**

Source: Information & Documentation System Unit, Ministry of Health Malaysia

TABLE 3.19 NUMBER & RATIO OF DOCTORS TO POPULATION BY STATE 1999

State	Public	Private	Total	Ratio
Johor	732	745	1,477	1:1,808
Kedah	461	364	825	1:1,915
Kelantan	610	166	776	1:1,962
Melaka	291	243	534	1:1,111
Negeri Sembilan	330	245	575	1:1,455
Pahang	391	221	612	1:2,110
Perak	762	666	1,428	1:1,483
Perlis	102	31	133	1:1,701
Pulau Pinang	494	679	1,173	1:1,063
Sabah	461	260	721	1:4,120
Sarawak	490	281	771	1:2,629
Selangor	759	1,469	2,228	1:1,431
Terengganu	333	118	471	1:2,194
Wilayah	2,487	1,292	3,779	1:372
Malaysia	8,723	6,780	15,503	1:1465

Source: Eighth Malaysia Plan

TABLE 3.20 PUBLIC VERSUS PRIVATE SECTORS PHYSICIANS 1972-1999

Year	Public	%	Private	%	Total
1972	1,357	59.0	942	41.0	2,299
1978	1,718	56.2	1,340	3.8	3,058
1981	1,986	50.4	1,955	49.6	3,941
1984	2,061	45.7	2,444	54.3	4,505
1990	3,021	43.1	3,991	56.9	7,012
1993	3,810	46.0	4,469	54.0	8,279
1997	4,719	43.8	6,051	56.2	10,770

Source: Malaysian Medical Council

"The growing private sector has met the demand for medical care from arising numbers of the relatively well-off, thus allowing more of the public sector health services to be used by the poor." (Health in Malaysia, Ministry of Health 2000). It can be seen that private sectors keep their prices down thanks to heavy government subsidies.

With no barriers of entry, private healthcare is challenging the conventional healthcare system since this new entity is redefining the rules of the game. The following are reasons why the private sector is gaining wide recognition among the Malaysian population.

1. In order to be competitive and attractive, the private sector is attracting resources (physicians, nurses, allied health and other professionals) away from the public sector with better pay and other incentives. From the comparative statistics taken, substantial number of physicians and nurses are employed in the private sector.

2. Private physicians have fewer patients that the public physician. In other words, public physicians are working three to four times harder than the private physicians. Moreover, physicians are more highly paid in the private sector. Therefore, there is an inbalance of resources between the two sectors.

3. Most private practices are urban-based. There is a market for high-quality care in highly populated cities. It is a lucrative market due to the fact that major corporations and conglomerates are located in the urban areas.

4. Private healthcare is concerned only with the curative aspects of health. Curative health provides immediate, and not long-term care.

3.8 MALAYASIAN HEALTHCARE STATUS

In trying to understand performance measurement systems of healthcare services, one must not overlook the need to understand public health, the environment in which the systems operates. Where is Malaysian healthcare now? The answer to the above question lies in this section. Malaysian health status encompasses:

3.5.9 Improving life expectancy
3.5.10 Reduction in mortality rate
3.5.11 Narrowing differences among states
3.5.12 Maintaining low healthcare expenditure
3.5.13 Public-private Dichotomy: Keeping cost down
3.5.14 Information Technology (IT) in healthcare
3.5.15 Research in healthcare services
3.5.16 Healthcare across Borders

3.8.1 Improving Life Expectancy

Life expectancy of Malaysia has improved over the years. This can be shown from statistics below.

TABLE 3.21 AGE SPECIFIC DEATH RATES IN MALAYSIA

Age	1970	1980	1990	1996	% change
<1	4,253	2,550	1,330	547	-87.1
1-14	211	112	63	46	-78.2
15-29	147	121	106	113	-23.1
30-44	330	240	206	197	-40.3

45-59	1,037	899	757	688	-33.7
60-64	2,709	2,347	1,904	1,847	-31.8
>64	5,320	6,276	6,123	6,129	15.2
Tot no of death	64,035	64,212	71,439	94,840	

Source: Department of Statistics, Malaysia 1996, World Bank 1995

3.8.2 Reduction in mortality rate

The mortality rate has shown a marked reduction since 1985. The crude death rate has been reduced by more than ninety (90) percent. Neonatal, infant, toddler and maternal mortality rates are among the lowest in developing countries. Overall, Malaysia has shown considerable improvement in reducing the mortality rate.

TABLE 3.22 MORTALITY RATE (PER 1,000 POPULATION) MALAYSIA 1985-1997

Year	Crude death Rate (CDR)	Perinatal mort. rate (PMR)	Neonatal mort. rate (NMR)	Infant mort. rate (IMR)	Toddler mort. rate (TMR)	Maternal mort. rate (MMR)	Post neonatal mort. rate (PNMR)
1985	50.0	19.3	10.5	16.5	1.4	0.4	5.0
1986	14.8	17.9	10.1	15.6	1.6	0.2	4.8
1987	4.6	16.5	9.5	14.5	1.2	0.2	4.6
1988	4.7	16.0	9.1	14.1	1.1	0.2	4.7
1989	4.6	15.5	8.6	13.4	1.0	0.2	4.6
1990	4.7	13.8	8.5	13.1	0.9	0.2	4.7
1991	4.6	12.3	8.2	12.5	0.9	0.2	4.6
1992	4.6	12.2	7.9	12.2	0.9	0.2	4.6
1993	4.5	11.4	7.5	11.4	0.9	0.2	4.5
1994	4.5	10.9	7.2	10.9	0.9	0.2	4.5
1995	4.6	9.8	6.8	10.4	0.8	0.2	4.6
1996	4.5	9.1	6.0	9.1	0.7	0.2	4.5
1997	4.6	9.1	6.1	9.5	0.7	0.2	4.6
% change	-90.8	-52.8	-41.9	-42.4	-50.0	-50.0	-8.0

Source: Department of Statistics

3.8.3 Equity: Narrowing Differences among States

Table 3.23 COMPARISON AMONG STATE : INFANT, TODDLER & MATERNAL MORTALITY

State	Infant Mortality Rate				Toddler Mortality Rate				Maternal Mortality Rate			
	1980	1985	1994	% change	1980	1985	1994	% change	1980	1985	1994	% change
Perlis	24.2	17.6	9.8	-59.5	2.2	1.3	0.7	-68.2	60	79.9	19.6	-67.3
Kedah	28.3	19.9	12.1	-57.2	2.8	1.8	0.9	-67.9	80	54.6	20.3	-74.6
Penang	20.1	13.8	10.3	-48.8	1.5	0.8	0.6	-60.0	40	30.7	27.3	-31.8
Perak	24.9	19.4	11.2	-55.0	2.3	1.5	0.9	-60.9	70	44.7	28.5	-59.3
Selangor	19.6	13.2	8.1	-58.7	1.4	1.1	0.6	-57.1	30	13.8	13	-56.7
NegSembilan	22.5	12.4	12.6	-44.0	1.7	1	0.6	-64.7	10	40.8	10.9	9.0
Melaka	19.6	16.8	9.6	-51.0	1.7	1	0.9	-47.1	50	6.4	6.7	-86.6
Johor	24.8	15.1	10.2	-58.9	1.8	0.9	0.7	-61.1	40	24	26.8	-33.0
Pahang	27.4	16.8	10.7	-60.9	2.3	1.7	0.8	-65.2	150	59.5	30.4	-79.7
Terengganu	31	22.1	11.9	-61.6	3.3	2.4	0.9	-72.7	110	57.4	11.4	-89.6
Kelantan	30.9	25.5	10.9	-64.7	3.2	2.2	1.3	-59.4	70	60.6	16.2	-76.9
Sabah	22.8	16.7	17	-25.4	2.6	2	1.3	-50.0	50	20.2	15.4	-69.2
Sarawak	19.5	11.2	7.8	-60.0	2.5	0.9	0.6	-76.0	10	10	14.5	45.0
Wilayah	11.4	9.7	10.7	-6.1	1.2	0.5	1.1	-8.3	10	12.5	21.5	72.0
Malaysia	**23.8**	**16.5**	**11**	**-53.8**	**2.1**	**1.4**	**0.9**	**-57.1**	**60**	**37.1**	**19.1**	**-68.2**

Source: Department of Statistics, Malaysia

Table 3.23 shows an improvement in the health status in Malaysia. The gaps have been narrowed in the indicators shown among the states. There are a few poor states where improvement is still needed especially in reducing infant and maternal death. Malaysia needs to promote health education in the rural areas and educate the target audience about the importance of child delivery in a safe environment, ie delivery in health facilities and hospitals and NOT at home with untrained midwives.

3.8.4 Maintaining low healthcare expenditures

Healthcare expenditure was kept to a minimum due to government intervention on health status and equity. The Ministry of Health has successfully maintained levels of expenditure averaging less than three (3) percent of GNP. This is considerably lower than the health care expenditure of other developing countries. Furthermore, the outcome of of health status is not very different from those of developing countries. See table 3.24.

The healthcare expenditure of Malaysia is considerably lower than that of other developing nations. The Ministry of Health (2000) attributes this low expenditure to government focus in the rural areas in terms of rural health and infrastructure and "consistent emphasis on preventive and low-cost services." Furthermore, the outcomes in term of health status do not lag behind those of developed countries. Table 3.24 and table 3.25 show how Malaysia compares with developed and developing countries.

TABLE 3.24 ANNUAL BUDGET FOR MINISTRY OF HEALTH

	Annual Budget (RM million)			*% of national*	*% of GNP*	*per capita*
Year	*Development*	*Operating*	*Total*	*Budget*	*(RM)*	*Allocation*
1970	6	157	183	5.64	1.51	17.39
1976	93	368	461	6.30	2.45	37.73
1980	136	759	895	5.27	3.53	66.65
1986	159	1,174	1,333	4.33	2.46	83.00
1990	345	1,278	1,623	4.86	2.14	91.00
1996	541	2,491	3,032	5.47	2.46	148.00

Source: Finance Division, Ministry of Health Malaysia

TABLE 3.25 HEALTH STATUS IN DEVELOPING COUNTRIES

Countries	Health exp % GDP	Life expectancy at birth (years)	Infant mortality rate	Population per physician
Korea	6.6	72	16	1,370
Hong Kong	5.7	78	7	82
Thailand	5.0	68	27	5,000
Papua New Guinea	4.4	52	55	12,870
Sri Lanka	3.7	72	18	na
China	3.5	69	38	1,060
Malaysia	**3.0**	**71**	**15**	**2,700**
Phillipines	2.0	64	41	8,120
Indonesia	2.0	59	74	7,030

Source: World Development Report 1993 and 1996

TABLE 3.26 HEALTH INDICATORS FOR DEVELOPED COUNTRIES

Countries	Life expectancy at birth Male	Female	Infant mortality per 1,000 live birth	Health spending as % GDP	Doctors per 10,000 pop
Japan	75.9	81.8	4.5	6.7	16
Germany	71.8	78.4	7.5	8.2	30
America	71.5	78.5	9.7	11.8	23
Britain	72.4	78.1	8.4	5.8	14
France	72.4	80.6	7.5	8.7	30
Canada	73.0	79.8	7.2	8.7	22
Holland	73.7	80.0	6.8	8.3	24
Malaysia	**69.0**	**73.5**	**13.5**	**3.0**	**4**

Source: The Economist, July 6, 1996

3.8.5 Public-private dichotomy: keeping costs down

There is dramatic growth in the private sector. Between 1980 and 1996 the growth in hospitals beds was more than sevenfold. In 1980, private hospital beds made up 5 % of all hospital beds in Malaysia. However, in 1997 private hospital

beds comprised 28 % of all hospital bed in Malaysia, an almost sixfold increase. The private hospital companies have established chains.

Table 3.28: NUMBER OF PRIVATE HOSPITALS & BEDS BY STATES

State	1994		1995		1996		1997		1998	
	number	beds	number	beds	number	beds	number	beds	number	beds
Johor	27	500	30	600	35	637	39	766	36	772
Kedah	10	208	11	262	11	262	12	289	12	347
Kelantan	1	10	1	10	1	10	2	12	3	71
Melaka	7	508	7	603	7	614	7	668	9	685
Negeri Sembilan	6	78	6	78	6	120	7	123	7	123
Pahang	7	89	7	97	7	116	7	116	8	143
Perak	16	592	17	717	16	755	16	752	13	729
Perlis	-	-	-	-	-	-	-	-	-	-
Pulau Pinang	19	1,276	21	1,351	21	1,323	23	1,532	22	1,514
Sabah	10	221	10	221	11	224	11	224	11	220
Sarawak	13	312	14	316	15	376	13	347	10	344
Selangor	25	878	30	1,047	29	1,078	35	1,587	40	1,774
Terengganu	1	16	2	21	2	21	2	21	2	17
Wilayah	42	1,804	41	1,869	42	1,935	45	2,526	43	2,321
Malaysia	**184**	**6,492**	**197**	**7,192**	**203**	**7,471**	**219**	**8,963**	**216**	**9,060**

Source: Annual report 1998, Ministry of Health Malaysia

TABLE 3.27 NUMBER OF PRIVATE HOSPITALS AND BEDS 1980-1997

Year	Hospitals	Beds
1980	50	1,171
1983	115	3,465
1986	138	4,073
1993	180	5,799
1997	221	9,011

source: Lapuran tahunan Kementerian Kesihatan 1997

It is interesting to note that most of these private hospitals are urban-based. They are only accessible to those who can afford them. It is dictated by market forces. Currently, there is no control over private practices' charges to the patient. As the Ministry pointed out (Ministry of Health Malaysia 2000), "there is no control of private health care charges, nor are there mechanisms to control and coordinate private sector purchase of high technology equipment, in other words, there is no mechanism by which cost escalation can be checked besides that imposed by the marketplace." As a result of this, the government decided to pass an amendment, Hospital Act 1971, the transparency of charges made by private clinics and hospitals for consultation, medication and procedures.

The inefficiency in cost containment has led the private sectors to contribute to Health Maintenance organisation (HMO). In January 1996, the Ministry passed guidelines for managed care organisations (MCO). At the same time a new chapter in healthcare management was opened. These MCOs were supposed to help private sectors to trim down their health expenditures by eliminating waste and duplication of services.

3.8.6 Information Technology (IT) in Healthcare

The Prime Minister in his inaugural meeting of the Malaysian Business Council said about vision 2020 (Mahathir 1991):

"the information would be an important and integral part of a developed Malaysia. No developed country is poor in information resources and no country poor in information resources is developed."

The Ministry of Health has developed the following systems to introduce IT to Malaysian hospitals so as to improve efficiency and effectiveness of services to the population.

3.8.6.1 Personnel Management Information System (PMIS)

PMIS is the earliest system implemented in the public healthcare, State Health department in 1994. It tracks personnel information in general.

3.8.6.2 Human Resource Management System –LAN (HRMS)

This is local network system. The objective of the system is to utilise the information.

3.8.6.3 Maternal and Child Health System (MCHS)

The network systems which link Perlis State Health Officers to Perlis State Health Director's Office, Kangar Hospital and nine (9) health clinics, namely Kangar maternal and child clinics, Kuala Perlis health clinics, Padang Besar health clinics, Arau health clinics, Simpang Empat health clinics and Kuala Sanglong health clinics. It is at pilot stage.

3.8.6.2 Communicable Disease Surveillance and Control System (CDCS)

It is the networking system connecting the district health office, hospitals, laboratory, centre for disease control unit and vector unit to the State health department. The system is linked to Disease Control Division, whose headquarters are in the capital city, Kuala Lumpur. The pilot study was conducted in the state of Kedah. The objective of the system is to serve as an early warning. It focuses on food and water-borne disease such as cholera, typhoid, food poisoning, Hepatitis A and Acute Gastroenteritis

3.8.6.3 Outpatient Management Services System (SPPL)

This system links up the specialist clinics to outpatient departments, Accidents & Emergency and other clinical supportive service departments like radiology, physiotherapy, pharmacy, forensic, blood banks and pathology laboratory. The Ministry conducted two (2) pilot study in Seremban hospitals and Batu Pahat hospital in early 1998.

3.8.6.4 Inpatient Administration System (IAS)

This system was implemented between 1994 and 1997. It covers eleven (11) hospitals, namely Pulau Pinang hospital (Pulau Pinang), Seremban hospital (Negeri Sembilan), Tengku Ampuan Afzan hospital (Pahang), Queen Elizabeth hospital (Sabah), Ipoh hospital (Perak), Tengku Ampuan Rahimah hospital (Selangor), Alor Setar hospital (Kedah), Seberang Jaya hospital (Pulau Pinang), Kajang hospital (Selangor), Terengganu hospital (Terengganu) and Sultanah Aminah hospital (Johor). The main objective of the system is to reduce hospital bill arrears and at the same time increase staff productivity at the service counter. The functions covered under this system from registration until discharge are patients registration, billing and revenue collection, ward services, accounting arrears, kitchen services, patients bio-data and health management statistics.

3.8.7 Research in Health Services

In order to be a developed nation, Malaysia has to focus on research activities in the various disciplines of healthcare. At the moment, research activities are not well developed in Malaysia. Data collected are fragmented and segregated across agencies. Table 3.29 shows research intensity in Malaysia (less than 0.5 percent of the budget spent). This phenomenon in research led the Ministry of Science, Technology and Environment to initiate a R&D national survey in 1994. The findings from this large survey supported the researcher's contention that research in Malaysia needs to be intensified. Below are statistics showing research areas in health. The researcher is interested in health services research in general.

TABLE 3.29 TYPES OF RESEARCH UNDERTAKEN

Types	No	Percentage	Field of research	No	Percentage
Biomedical	23	52.3	Public health, environmental Occupational health & safety	17	38.6
Clinical	8	18.2	Other medical & health services	11	25.0
Epidemiology	7	15.9	Medical microbiology	5	11.4
Environmental	2	4.6	Immunology	4	9.1
Behavioural	2	4.6	Clinical sciences	4	9.1
Health system	2	4.6	Health services research	3	6.8
Total	44	100		44	100

TABLE 3.30 PROJECT APPROVED ACCORDING TO PRIORITY CATEGORIES

Priorities	No	%
1. Health problems associated with lifestyles	7	15.9
2. Health problems associated with demographic changes	6	13.6
3. Epidemiological database	3	6.8
4. Occupational and environmental health	2	4.6
5. Vector-borne & other communicable diseases	13	29.6
6. New technologies in health	11	25.0
7. Healthcare system and industries	2	4.6
Total	44	100

TABLE 3.31 FUNDS UTILISED FOR RESEARCH COMPARED TO OPERATING EXPENDITURE

Year	Operating expenditure	R&D	Percent
1985	1,094,117,000	na	na
1986	1,114,345,000	na	na
1987	1,081,695,700	na	na
1988	1, 142,741,900	7,141,343	0.624
1989	1,248,230,600	2,660,946	0.213
1990	1,335,325,500	3,366,421	0.252
1991	1,492,222,400	3,286,820	0.220
1992	1,798,404,800	3,009,480	0.167
1993	1,985,432,950	2,904,301	0.146
1994	2,085,900,000	3,865,278	0.187
1995	2,165,265,000	4,407,634	0.203

Source: Ministry of Science and Technology (1994), Annual Report of the National Council for Scientific Research and Development, Jabatan Percetakan Negara, Kuala Lumpur, Malaysia.

From the tables above, health services research accounts for only 6.8% of the total research undertaken in Malaysia. Even in priority areas, only 4.6% of projects were approved. There is so much more research that could be undertaken to improve healthcare services. However, there are not enough researchers in the area of health systems.

Because of the deficit in research, the government has initiated an IRPA (Intensification of Research in Priority Areas) as a body that coordinates between academics and industry in the country. The government has promoted this initiatives in all universites, public as well as private. As Abu Bakar Suleiman, Director-General of Health (1984) pointed out, "all those involved in directing research, conducting research and implementing research should consider themselves as partners in ensuring a healthy nation." This shows commitment and dedication on the part of the government to promote health towards international standards.

3.88 Healthcare across Borders

The Director-General of Health, World Health Organisation (WHO) acknowledges that a healthcare system is a complex entity that needs constant supervision. Dr Brundtland (WHO 2000) pointed out that "the difference between a well performing health system and one that is failing can be measured in death, disability, impoverishment, humiliation and despair; that is the reason why understanding international health is important so as to enhance learning experience." Dr Brundtland (WHO 2000) reiterated the need for performance measurement in health: "If policy-makers are to act on measures of performance, they need a clear understanding of the key functions that health systems have to undertakes." The four (4) functions that she pointed out are:

1. providing services
2. generating human and physical resources that make service delivery possible
3. raising and pooling the resources used to pay for healthcare
4. function of stewardship - setting and enforcing the rules of the game and providing a strategic direction for all the actors involved.

This section presents statistics in comparison with other countries in terms of establishment, expenditures, population and density. This section is intended to put Malaysia into the context of other nations, developing and developed countries.

TABLE 3.32 COMPARATIVE MEDICAL ESTABLISHMENT

Hospitals	Brunei	Indonesia	Japan	Malaysia	Philippines	Singapore	Thailand	Vietnam
General	√	√	√	√	√	√	√	√
Local/rural		√		√			√	√
Mental		√	√	√	√	√	√	√
Maternity		√		√	√	√	√	√
Infectious disease		√	√		√		√	
Leprosy		√		√	√		√	√
Tuberculosis		√	√	√			√	√
Other specialised		√		√	√	√	√	√
Primary health care	√	√	√	√	√	√	√	√

Source: SEAMICS health statistics 2000

TABLE 3.33 EXPENDITURE OF THE MINISTRY OF HEALTH

Countries	Fiscal year	TotalHealth budget (US$)	Health budget as % of national budget	Per capita health budget (US$)
Brunei	1998	119,359,465	7	369.0
Indonesia	1999	746,939,000	3	3.6
Japan	1999	148,102,010,359	20	1,180.7
Malaysia	**1999**	**1,187,436,371**	**7**	**52.4**
Philippines	1999	303,270,357	2	4.1
Singapore	1999	705,857	2	181.3
Thailand	1999	1,498,592,398	7	26.4
Vietnam	1995	201,743,419	4	2.7

Source: SEAMICS health statistics 2000

TABLE 3.34 TOTAL POPULATION, SURFACE AREA AND DENSITY

Countries	Year	Total pop	Persons per household	Annual rate of increase (%)	Surface area (km sq)	Density (person/km sq)
Brunei	1991	260,486	6	2.4	5,765	51
Indonesia	1990	179,322,000	4.5	1.6	1,937,179	107
Japan	1995	125,570,246	2.8	1.6	377,829	337
Malaysia	**1991**	**18,379,655**	**4.8**	**2.6**	**329,758**	**54**
Philippines	1995	68,616,536	5.1	2.3	300,000	229
Singapore	1990	2,705,115	4.2	2	660	5,900
Thailand	1990	54,548,530	4.4	2	513,115	106
Vietnam	1999	76,327,919	na	Na	331,114	235

Source: SEAMICS Health statistics 2000

TABLE 3.35 SOCIO-ECONOMIC INDICATORS FOR DEVELOPING & DEVELOPED COUNTRIES

Country	Density of pop (per sq km)	Crude birth rate	Crude death rate	pop growth	pop literacy	unemploy. rate	no. of hospitals	no. of doctors	pop per doctor	infant mortality rate	no. of tel per 100 pop
Malaysia	67	25	4.5	2.3	85	3.2	111	15,016	1,477	8.3	26.2
Indonesia	106	22.5	7.5	1.5	89.4	5.5	1,074	31,435	6,309	49	2.4
Thailand	120	-	-	1.1	-	3.4	1,397	16,571	3,593	5.8	8
Philippines	224	27.8	6	2.2	98	9.6	1,700	4,574	15,001	35.1	2.7
Singapore	5,965	13.2	4.6	1.9	93.1	3.2	23	5,148	751	3.8	33.8
Brunei	56	22	2.9	2.9	-	-	10	318	989	6.7	24.7
Vietnam	240	-	-	1.8	-	-	821	32,888	2,360	38	1
Myanmar	70	-	-	1.8	90.9	4.1	724	14,007	3,312	79	0.5
Japan	339	-	-	0.2	-	4.1	9,413	240,908	522	3.7	47.7
Korea	467	15.5	5.6	1	-	6.8	16,594	62,609	735	8.6	44
America	30	14.4	8.8	1	-	4.5	6,201	737,800	359	6.4	79.9
UK	245	12.1	10.6	0.3	-	6.1	-	27,099	1,819	5.7	-

Source: SEAMICS 2000

In order to be effective and efficient the government will devise corporatisation plans for hospitals that fail to serve the population. The government consider that corporatisation of hospitals will encourage initiative and taking full advantage of opportunities previously cannot be serviced by the public sectors. The government of Malaysia is concerned to deliver a just and caring healthcare service to the population.

Controlling healthcare costs is not an easy task. There are many studies done to identify aspects of healthcare costs. Three factors have been identified as causing expenditure to rise. This is important to managers as the knowledge could be used to devise a cost containment strategy. These factors are:

1. continuing growth of new and expensive technological advancement.
2. over-specialisation and urbanisation of specific ailments.
3. Ageing population

In the Malaysian context, healthcare systems need to be reformed so that better services can reach the population. Roemer (1993) cited in Dato' Suleiman, A (2000), "identified four options in healthcare provision and financing namely: Entrepreneurial and Permissive (free market), Welfare Oriented, Universal and Comprehensive and Socially and Centrally Planned System. Malaysia is sited in this matrix as 'Welfare Oriented' among developing and transitional countries."

TABLE 3.36 WORLD HEALTHCARE POSITION

Economic level (GNP per capita)	← Market Intervention → Entrepreneurial & Permissive	Welfare Oriented	Universal & Comprehensive	Socialist & Centrally-Planned
Affluent & Industrialised	United States	West Germany Canada Japan	United Kingdom New Zealand Norway	Soviet Union Czechoslovakia
Developing & Transitional	Thailand Phillipines South Africa	Brazil Egypt ***MALAYSIA***	Israel Nicaragua	Cuba South Korea
Very Poor	Ghana Bangladesh Nepal	India Burma	Sri Lanka Tanzania	China Vietnam
Resource Rich		Libya Gabon	Kuwait Saudi Arabia	

Source: Dato' Suleiman, A (2000), Annual Report, Printing Division, Ministry of Health: Kuala Lumpur Malaysia.

3.9 TRACKING PERFORMANCE MEASUREMENT ACTIVITIES IN MALAYSIA

3.9.1 Background

Performance measurement activities in healthcare sector are an emerging concept in Malaysia especially in the public sector. In its recent efforts, the Institute of Public Health (IPH) is developing clinical and non-clinical indicators for the public. Presently indicators are collected at the operational level (hospital site) and kept by the head of department at the respective hospitals. There is communication between national and regional level in respect to indicators collected. As Chapter

six will reveal in the case studies report at the regional level, the researcher found that the effort is not geared towards performance measurement practices. Healthcare information systems are also in their infancy. IPH is coordinating efforts to use the existing information to communicate the indicators to the public. This efforts of collecting indicators are a formalisation of performance measurement systems in Malaysia.

The government has realised that performance measurement is crucial in determining success in a system. This effort can be seen through Institute of Public Health and two other new formation of institution dedicated to research in healthcare; Institute of Health Management and Institute of Health Promotion. The Institute of Public Health focuses on health systems research and public health, while the Institute of Health Management focuses on health management research and the Institute of Health Promotion focuses on behavioural research and health education.

The Ministry of Health has always been concerned with providing quality of healthcare to the population. The Ministry conducted a National Indicator Approach (NIA) in 1986. This is the first report to assess patient quality care. From this exercise, the government has implemented nineteen (19) indicators nationwide. Areas covered in the indicators are patient management, resource utilisation and patient satisfaction. The following are performance indicators used in the exercise:

1. Death due to typhoid
2. Death due to elective cholecystectomy
3. Death due to to haemorrhage of pregnancy
4. Death due to eclampsia
5. Hospital gross death rate
6. Incidence of POP cast complication
7. Incidence of post-operative wound infection
8. Incidence of pressure sores in bed-ridden patients
9. Bed occupancy rate
10. Average length of stay

11. Myocardial infarction case fatality rate
12. death due to gastroenteritis
13. Head injury case fatality rate
14. Acute respiratory infection case fatality rate
15. Laboratory specimens rejection rate
16. Proportion of urgent laboratory tests
17. Proportion of outpatients undergoing X-ray examinations
18. Proportions of inpatients undergoing X-ray examinations
19. Proportions of X-ray films rejected.

(Source: Quality and Standards Unit, Medical Development Division, Ministry of Health 1988)

To coordinate the data collection of this new initiatives to measure performance, the Ministry has set up a committee, named the " National Quality Assurance Programme" (QAP) (see figure 3.9). This committee reflects the commitment of the Ministry to quality. Every level of health at different aspects of health are assessed to reflect Malaysian performance on quality of care. The organisational structure is as follows:

This structure takes into consideration 'top-down approach', that is the national indicators collected, and 'bottom-up', that is hospital specific indicators collected at the district or regional level.

3.9.2 How are these measures selected?

According to Lim and Sivalal (1991), "Each of the major clinical disciplines identified two problem-areas that were considered important and relevant to most hospitals." These include inpatient and outpatient departments. Issues addressed are patient care, resource utilisation and patient satisfaction. Indicators were developed for each area of concern in order to develop a standardised monitoring system. These indicators act as a alert signal or warning of potential problems.

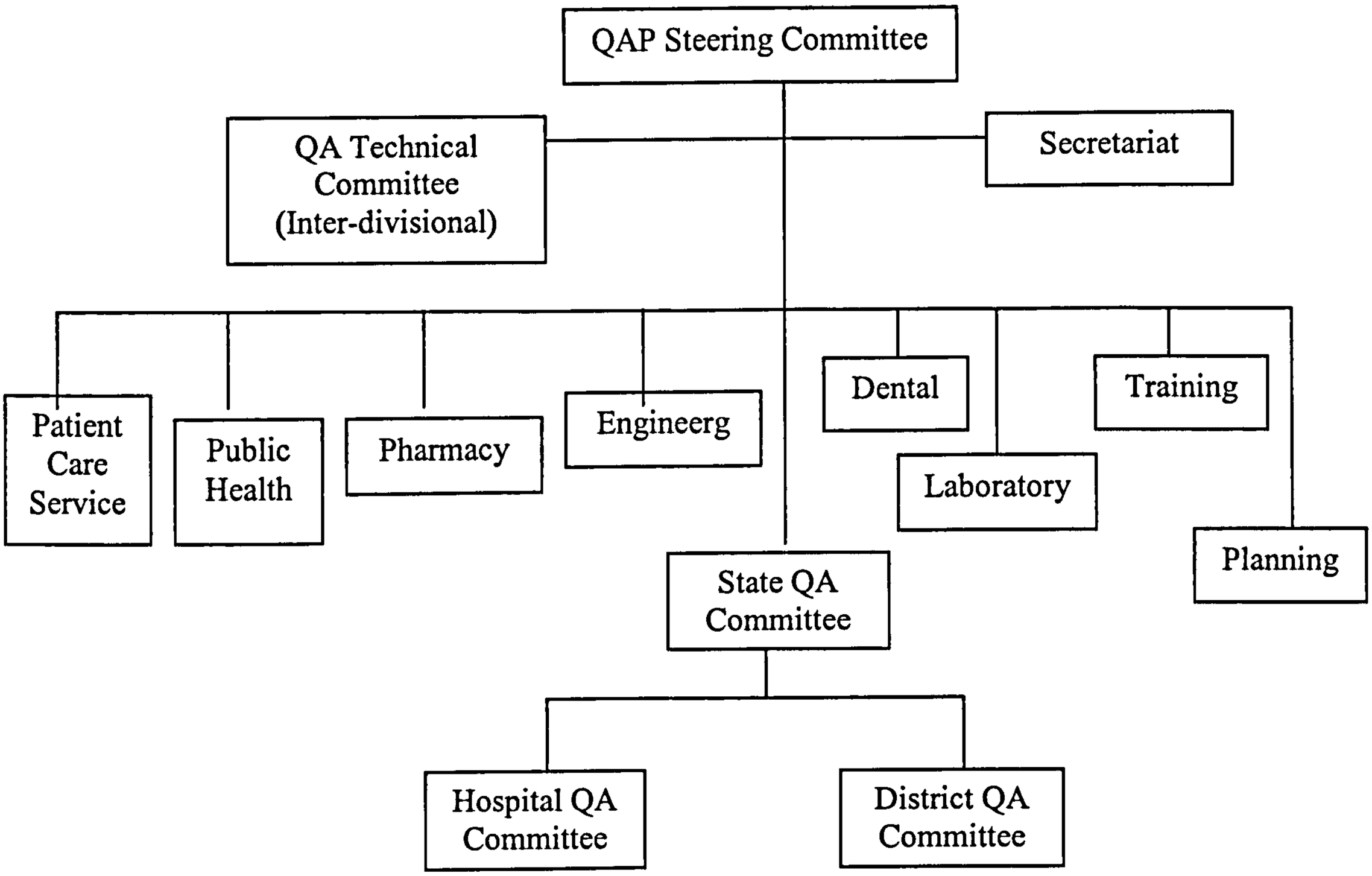


FIGURE 3.9 MALAYSIA HEALTHCARE COMMITTEE

The indicators (table 3.37) collected are not based on pre and post-admission, severity of cases, case mix and other extraneous conditions which are beyond the control of the Ministry of

Health. This is to ensure that indicators are valid and reliable. The following are indicators for the whole programme implemented by the Ministry of Health. Lim and Sivalal (1991) pointed out that institutions that did not conform to standards set were required to carry out investigations using protocols drawn up for each indicator.

TABLE 3.37 MEASUREMENT IMPLEMENTATION AT MINISTRY LEVEL

Programme Division	Implementation year	No of indicators
Patient care services	1985	19
Pharmaceutical services	1990	7
Public health services	1990	13
Engineering services	1992	7
Dental services	1992	9
Laboratory services	1992	11
Tarining & manpower	1996	5
Planning & Development	1998	3
Total		74

3.9.3 NATIONAL INDICATOR APPROACH

3.9.3.1 Patient care Services

This is a pioneering programme to collect indicators in Malaysia. This approach was been described by the WHO consultant as, "highly commendable, admirable innovation, pioneering." (Colloppy et al, 1996). It was intended to stimulate hospitals to compare to national standards. The list of nineteen indicators are the following:

- Death due to typhoid
- Death due to elective cholecystectomy
- Death due to to haemorrhage of pregnancy
- Death due to eclampsia
- Hospital gross death rate
- Incidence of POP cast complication
- Incidence of post-operative wound infection
- Incidence of pressure sores in bed-ridden patients
- Bed occupancy rate
- Average length of stay
- Myocardial infarction case fatality rate
- Death due to gastroenteritis
- Head injury case fatality rate
- Acute respiratory infection case fatality rate
- Laboratory specimens rejection rate

- Proportion of urgent laboratory tests
- Proportion of outpatients undergoing X-ray examinations
- Proportions of inpatients undergoing X-ray examinations
- Proportions of X-ray films rejected.

3.9.4 HOSPITAL SPECIFIC APPROACH

3.9.4.1 Public Health Services

This is a hospital specific approach in collecting indicators in the area of public health. Started in 1990 with initial of thirteen (13) indicators chosen, they were:

- 6 for maternal and child health
  - eclampsia
  - pueperal sepsis
  - neonatal tetanus
  - severe neonatal jaundice
  - 3rd dose of DPT coverage children under 1 year
  - visual defect

- 2 for disease control
  - morbidity index
  - average time notification index for typhoid

- 2 for food quality control
  - detection rate for contravening microbiological standards
  - detection rate for contravening non-microbiological standards

- 3 vector disease control
  - dengue notification index
  - dengue outbreak control index
  - malaria death

3. 9.4.2 Dental services

The Ministry of Health is the main provider of primary, secondary and tertiary dental care to the population. The dental programme currently monitors twelve (12)

indicators under the NIA. The planning and implementation of the dental programme covers:

- primary school children
- secondary school children
- pre-school children
- antenatal mothers
- adults

3.9.4.3 Pharmaceutical services

It was initiated in 1987 and officially launched in 1990. Three main areas were covered, ie hospital pharmacy, production of sterile preparations, and financial resources and management (store). Seven (7) indicators were developed to monitor these areas of concern

- therapeutic drug monitoring
- total parenteral monitoring
- unit of use/unit dose drug delivery system
- pharmacy-based cytotoxic drug reconstitution service
- drug information service

3.9.4.4 Engineering services

The objective of engineering services are monitoring of drinking water quality, medical usage of radiation and hospital engineering facilities. In March 1997, the engineering division were awarded ISO9002.

3.9.4.5 Laboratory services

According Suleiman, Abu Bakar (1984), " high quality medical care is heavily dependent on a high quality laboratory service in order for accurate and timely diagnoses to be made as well as follow up treatment of patients."

Six (6) service performance and three (3) timeliness indicators were implemented as a start. No difficulties were encountered especially for Chemical pathology, medical microbiology and haematology since these areas have existing standards from National External Quality Assessment Schemes (EQAS). Tests monitored include coagulation test, prothrombin time, international normalisation ratio (INR), and Activated Partial Prothrombin time (APPT).

3.9.4.6 Training and Manpower services

The function of these services is produce well-trained personnel in the area of quality healthcare. Five indicators were selected for the purpose. They are:

- teacher-student contact hours per teacher per 6 months
- teacher-student ratio
- percentage of lesson plan completed
- percentage of students not able to complete all clinical experiences (logbook)
- percentage passes per examination as stipulated in the curriculum

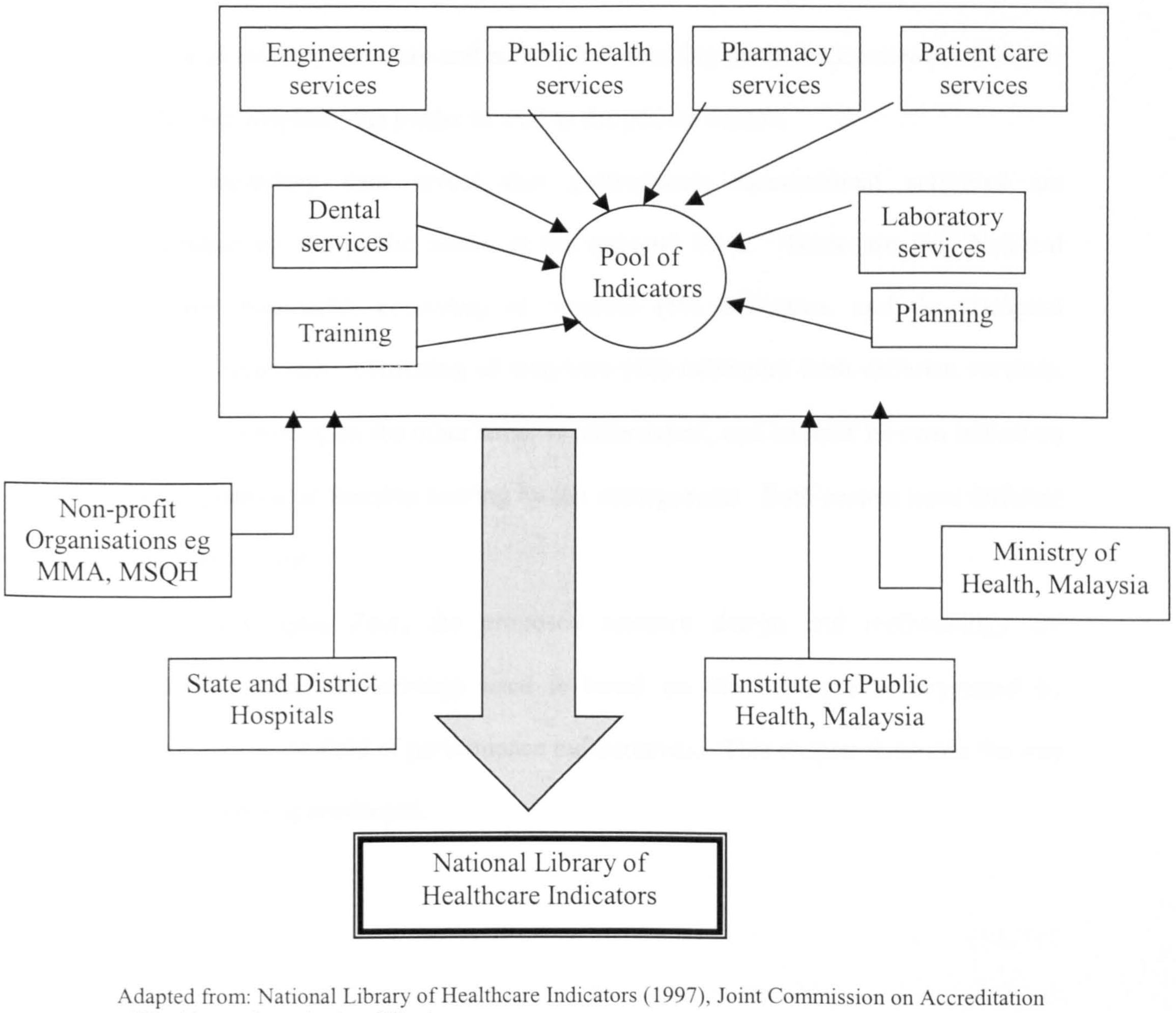
3.9.4.7 Planning and Development services

The objective of these services is to formulate an integrated health plan which includes health facilities for service delivery. Three (3) indicators were developed, one indicator for looking into equity and two for health status. Indicators mentioned are:

- static health facility population ratio
- infant mortality rate
- disease specific mortality rate.

Figure 3.10 gives a comprehensive view of indicators collected in relation to others, governmental and non-governmental agencies. All of this forms a National

Library of Healthcare Indicators which will be monitored more closely. At the moment, the Joint Commision of Accreditation in Healthcare Organisation in United States has successfully compiled approximately two thousand (2,000) tested indicators in different areas of healthcare practices. It is used as an instrument for accreditation of for both public and private heathcare providers.



Adapted from: National Library of Healthcare Indicators (1997), Joint Commission on Accreditation of Healthcare Organisation, Illinois.

FIGURE 3.10 SCHEMATIC VIEWS MEASUREMENT ACTIVITIES

3.10 SUMMARY

The purpose of this chapter is provide the Malaysian context for measuring performance in a healthcare setting. Secondary data were collected during the fieldwork. The aim of this chapter is to understand the factors that shape performance measurement systems in Malaysia. It serves as environmental scanning to look at industry structure and activities in tracking performance measurements in Malaysian hospitals, the public as well as the private sectors.

Secondary data reveal that performance measurement activities are undertaken by the public sector at the national level. These are the 'National Indicator Approach', consisting of nineteen (19) indicators, and the 'Hospital Specific Approach', consisting of forty-two (42) indicators from different services. The private sector, on the other hand, is independent, and collects its own indicators for the purpose of decision making by top management. Both sectors have different purposes in mind.

In Chapter Four, the proposed research design and methodology are described. The methodology used is based on the literature as suggested by researchers in the field of performance measurement. This chapter describes the way the research was conducted.

CHAPTER 4
RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

Before embarking on the research, various literatures on research methodology were scrutinised by the researcher to see the fit between the research questions (which will be elaborated later in this chapter) and the instrument used to collect the data (Hamilton and Davis, 1992). It is the researcher's belief that the choice of methodology will guide the data collection phase. The data collections depend on the research questions posed in the study and the research question will serve as the 'nerve' centre in this study. As Chenail (2000) puts it, research questions serve, "as a navigational tool". The question that the researcher poses to himself is, 'why is the study being carried out?' This chapter will attempt to highlight the methodological framework adopted in this thesis which will assist the researcher to explain why the study is conducted in the manner it is.

Selecting the appropriate approach to study the main area of interest is not a task taken lightly. The researcher has to consider prominent methodologists ranging from Glasser and Strauss (1967), Strauss and Corbin (1994), known for their grounded theory method; Yin (1994) known for his case study method; Jorgensen (1989), known for his participant observation method; Chenail (1999), known for his qualitative research methods, and many other authors in the field. The methods

widely used in research are case study, experimental, laboratory, ethnography and survey.

Galliers (1992), proposed a taxonomy that enables the researcher to choose among various approaches. This taxonomy (table 4.1) matches various approaches that correspond to some circumstances related to the objective of the research, process of theory development and extension of those theories. Based on the table, two approaches were considered, namely survey and case study. Both the approaches were chosen due to their ability to build and test the theory.

TABLE 4.1 RESEARCH APPROACHES TAXONOMY

Approaches	Theory Building	Theory Testing	Theory Extension
Experimental Design	No	Yes	Possible
Case Study	Yes	Yes	Possible
Survey	Yes	Possible	Possible
Forecasting	Yes	No	No
Simulation	Yes	Possible	No
Action Research	Yes	Yes	Possible

Adapted from Galliers (1992)

4.2 RESEARCH OBJECTIVES

The first objective of this study is to understand the nature of performance measurement system practices within the public and private health sectors in Malaysia. As a new developing country, Malaysia is moving towards organisational efficiency and effectiveness especially in governmental sectors. While the private sectors have been improving their competitiveness, the public sectors have only recently stated similar initiatives. In any case, the next step is to evaluate or measure

the success of these initiatives. A comparison was made between the public and private sectors to comprehend the nature of performance measurement systems in these sectors. It is interesting to note that from the literature survey, it was found that the fundamentals of measuring differ between public and private enterprises. The former is driven by societal accountability (Parker, 1993), while the latter is driven by market forces and profit. Performance measurement is a relatively a new area of growing importance and has not been extensively researched in Malaysia, particularly in the healthcare sector.

The second objective of this thesis is to study PMS in terms of efficiency and effectiveness. The researcher will explain how performance measurement practices will ensure proper resources allocation and utility. Many theories on performance measurement (Neely 1998, Bititci 2000, Kaydos, 1999; Kaplan and Norton 1992 and many other prolific writers) state that with proper performance measurement systems implemented in an organisation, we can see improvement in targeted areas depending on what is being measured. This is 'anecdotal' evidence claim in most literature. There is an improvement because the organisations allocate and utilise resources effectively and efficiently. All of this is attributable to designing an effective performance measurement system. The researcher intends to see if performance measurement in the context of Malaysian Healthcare services sectors achieve the same.

The third objective is to propose a framework for Performance Measurement System for Health Care Services in Malaysia. This framework will help the organisation to understand the multidimensional perspectives of Healthcare Services

in designing performance measurement systems effectively. The proposed framework will be discussed further in the next chapter.

The fourth objective is to illustrate the use of a balance of measures as suggested by Kaplan and Norton (1992) which results in an effective performance measurement systems. It is the researcher's intention to develop performance measurement systems for the healthcare services in Malaysia. In this connection, the researcher hopes that the related organisations will understand the dynamics of performance measurement and strive for continuous improvements in the future. From the literature, the researcher found that most researchers (Ballantine et al, 1994; Farbey et al, 1993 and Lincoln, 1990 and many others) concentrate on financial criteria to measure performance. This study intends to illustrate that the measures must be a balance between financial and non-financial criteria. (Kaplan and Norton 1992; Neely et al 1998; Globerson, 1996; Bititci 1998 and many other writers in the field)

According to Chenail (2000), with research questions it will enable the researcher to look where the data is.

4.3 RESEARCH QUESTIONS

The next step is to navigate the research through the research questions posed in this thesis. The aim of these questions is to guide the researcher in the conduct of the research. The answers to the first and second questions lie in the survey methodology and the third question will be answered through multiple case studies. This will be explained further in the next chapter.

1. How is performance being measured in Malaysian hospitals?
2. What is being measured?
3. Why is it measured that way?

The rationale for these questions is to understand the nature of performance measurement systems in the context of organisational setting. This concept is elaborated in the literature review (Chapter Two). The 'How' and 'What' help explain performance measurement in the Malaysian context, that is developing countries. These questions will put structure into performance measurement to enable better understanding of it. The 'Why' question is a content aspect (process) of performance measurement. It helps the researcher to understand why performance is measured in the way it is in the Malaysian settings. All of these questions will be answered at the end of the thesis in chapter Seven.

4.4 RESEARCH DESIGN

Sekaran (1992) defines research as "an organised, systematic, data-based, critical, scientific enquiry or investigation into a specific problem undertaken with the objective of finding answers or solutions to it". He also suggested that the hallmarks of good research are purposiveness, rigour, precision and confidence, objectivity, generalisability and parsimony (avoidance of unnecessary complexity), testability and replicability. The main objective of this research design is to achieve these criteria.

Nachmias and Nachmias (1981) define research design as

".....the program that guides the investigator in the process of collecting, analysing and interpreting. It is a logical model of proof that allows the researcher to draw inferences concerning causal relations among variables under investigation. The research design also defines the domain of

generalisability, that is, whether the obtained interpretations can be generalised to a larger population or different situations".

All researchers who attempt to study the use of performance measurement systems, as opposed to performance measures, use the case study approach, as will be explained further in the chapter. For research using performance measures, postal questionnaires are sufficient to accomplish the task since such questionnaires generally involve attempting to identify the 'what' and 'how' of measurement rather than the 'why'. However, in researching performance measurement systems there is a need for in-depth understanding of the organisation under study, and the details of how, what and why performance is measured. (Euske et al 1993). This is especially crucial when the study is conducted abroad. There are many contexts that shape performance measurement systems in an organisation, such as culture, politics, government policies and other attributes that have an influence in the systems.

Figure 4.1 shows the overall research design which the researcher collated from authors in the field. The operationalisation of this model of the research design will be elaborated further in this chapter.

4.5 THEORETICAL SENSITIVITY

Strauss and Corbin (1990) define sensitivity as the ability to define research problems, to recognise what is important in data and to give it meaning. There are two sources of theoretic sensitivity in this study, that is the review of current literature from distinct areas and a continuous interaction of data collection. Areas that are relevant and closely related to the research topic are services management, performance measurement and management control in the healthcare services. This

enables the researcher to be more theoretically sensitive. Glaser (1978) and Strauss and Corbin (1990) point out that theoretical sensitivity of the researcher is also influenced by the research and personal experience that the researcher brings to his or her inquiry.

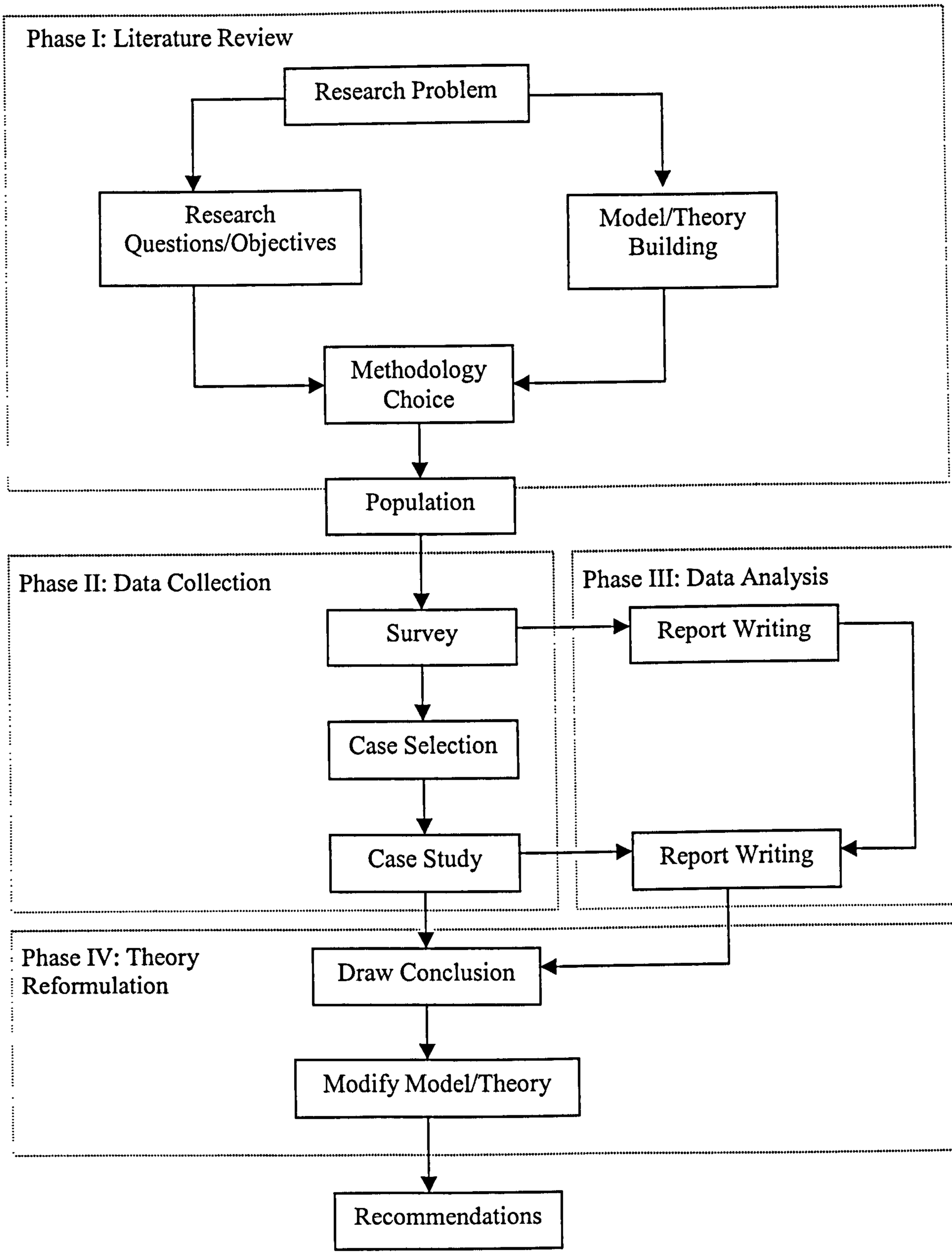
4.6 PROBLEM STATEMENT

4.6.1. Lack of Literature in Developing Countries

There is a gap in the literature on performance measurement systems in developing countries in respect to health care settings. The researcher has scrutinised literature in the host country and has found none that is parallel to this thesis. This search can be seen from researcher activities to trace secondary data in the host country. See chapter three for secondary data compilation of fieldwork in Malaysia.

However, due to lack of literature on performance measurement in the host country, the researcher has had to look at the literature in developing countries. Even for developing countries, the researcher found very few writers have examined aspects of performance measurement in healthcare services (Eddy 1998; Ballantine 1998; Charns, 1997; Counte 1988; Shortell 1999 and some other writers).

Most of the performance measurement literature concentrates on the manufacturing aspects of the economy (Upton 1998; Adam et al 1997; Mchanty and Deschmukh 1999; Love, Maskell 1998; Gunasekaran and Li 1998). Less emphasis is on the service sector. (Chenet et al 1999; Dib et al 1998; Donabedian 1998; Dotchin and Oakland 1994 and others). The combination of healthcare and services has restricted further the search to notable writers in both fields.



Source: adapted from Galliers (1992), Yin (1989) and Munck (1999)

FIGURE 4.1 THE RESEARCH PROCESS MODEL

There seems to be an inbalance in the literature. In order to highlight this inbalance, the researcher will try to map this using the taxonomy approach (some writers call it meta-analysis) on the literature, which is presented in table 2.11. Meta-analysis, according to Burns (1994), "is an analysis of analysis". It is a technique of rigorous comparison in which results are analysed across a set of similar subjects. Moreover, performance measurement systems in healthcare services is a new emerging area (Ragin 1998) that recently gained recognition as a way to improve organisational performance. The main objective of the research is to understand the nature of performance measurement systems of health care services in a developing country with a view to gaining insight into the process of measuring in a hospital setting. It is the researcher's belief that the understanding of performance measurement practices should be fashioned on the basis of the needs of the developing country and not in terms of what is to be found in other developed countries. It is the opinion of the researcher that the developing country should in fact allow its own environment to guide the development of its own performance measurement systems (also supported in Western literature).

At present, efforts are being intensified in developing performance measures in Malaysian organisations. It is at its embryonic stage, especially in the healthcare sector. This phenomenon can be seen from management consultants' reports, accounting bodies and other governmental entities regarding measurement activities in Malaysian organisations.

4.6.2 Lack of Linkages in the Study

From Galliers taxonomy, the researcher has chosen two methods of data collection, which is survey and case study. The researcher's selection of the two methods from the taxonomy has been explained at the beginning of the chapter. The researcher has decided to mix the methodology, between quantitative and qualitative methods. These will create synergy in the research, as Brennan (1999) points out that it is meant for complementary purposes not rivalry. Diesing (1971) cited in Jick 1979, "boldly concluded that the variety of combinations is so great that survey research and fieldwork are better viewed as two ends of a continuum rather than as two distinct kinds of methods." Bryman (1989) argued that,

"....when quantitative and qualitative research are jointly pursued, much more complete accounts of social reality can ensue.....the rather artisan either..or tenor of the debate about qualitative and quantitative research may appear somewhat bizarre to an outsider, for whom the obvious way forward is likely to be a fusion of the two approaches so that their strengths might be reaped."

Recently, these methods are preferred against single methods because it will eventually triangulate (Denzin 1979). Denzin (1979), define triangulation as "combination of methodologies in the study of the same phenomenon" which he argues that, "the use of different methods by researchers studying the same phenomenon should, if their conclusions are the same, lead to greater validity and reliability than a single methodological approach".

Denzin (1984) identifies four types of triangulation:

1. data source triangulation, when the researcher looks for the data to remain the same in different contexts;
2. investigator triangulation, when several investigators examine the same phenomenon;

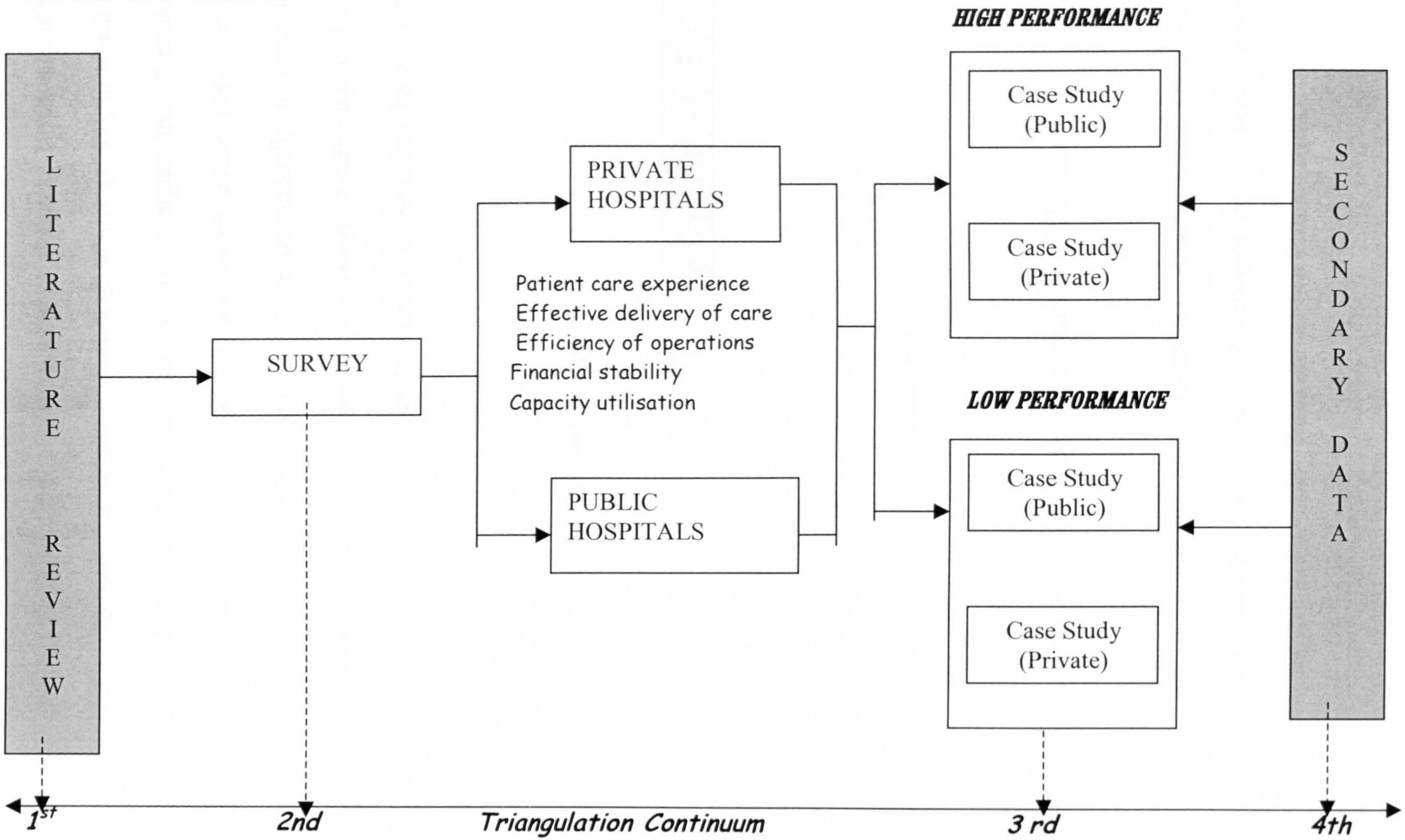
3. theory triangulation, when investigators with different viewpoints interpret the same results;
4. methodological triangulation, when one approach is followed by another, to increase confidence in the interpretation.

This study make use of methodology triangulation (number 4). The rationale for using methodology triangulation is that weaknesses in a method will be compensated by the counter-balancing the strength of the other method, thus, giving synergy to the research. It is assumed that multiple and independent measures do not share the same weaknesses or potential bias. (Amaratunga et al (2001).

To sum up, triangulation according to Jick (1979), "can potentially generate what anthropologists call 'holistic work.'' The researcher believes that combining quantitative with qualitative data will enriche the information density, vividness and clarity of meaning in the study. Figure 4.2. demonstrates the theoretical framework for the study.

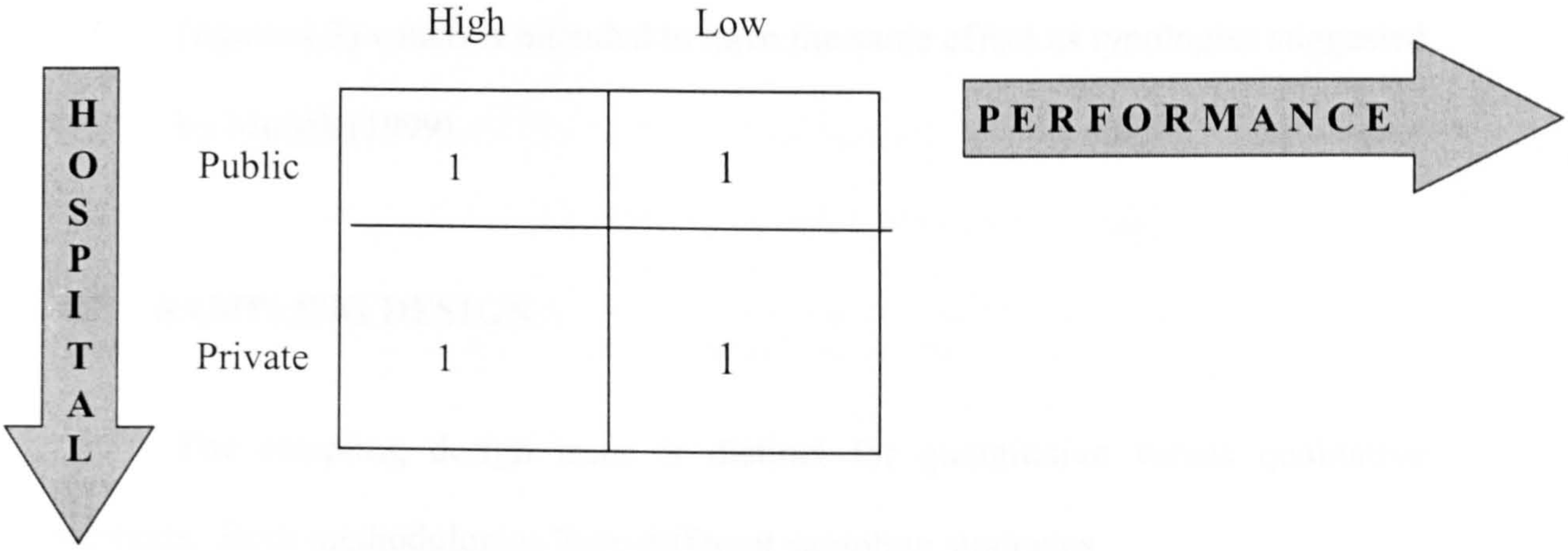
The triangulation strategy is not without shortcomings. Replication is one area that attracts attention. The researcher recognises that to replicate multiple methodology is unnecessary and time consuming. Therefore, in order to minimise this, Eisendhart (1989) proposed a case study protocol, which can be used across case studies (this will be elaborated further in a later section). This helps in setting a standard across cases so that it can be replicated accordingly. Phillips (1971) says that, "...triangulation demands creativity from its user, ingenuity in collecting data and insightful interpretation of data". In this thesis, the combination of methods is not of equal weight (Brennan 1999). The quantitative method plays a subsidiary role

FIGURE 4.2 THEORETICAL FRAMEWORK FOR THE STUDY



to qualitative methods. It is used as a basis for sampling of cases in which forms the intensive study. Some authors define it as 'theoretical sampling' (Roberts 1989), 'purposive sampling' (Sekaran, 1992), 'case selection' (Munck, 1999) and other writers in the field. The researcher follows the work of Munck (1999), in which he stresses the need to define the population. Munck (1999) argues that, " random selection of observations in small n-research will often cause very serious biases…..". He recommends selection must be done intentionally to force the attributes of the sample selection out. From a population of three hundred and twenty-three (323) hospitals, the researcher has classified selection base on the following matrix:

TABLE 4.2 ORGANISATIONAL PERFORMANCE MATRIX



Munck (1999) suggested the way the universe of cases should be selected:

1. "conceptually equivalent and comparable". The researcher selected four (4) cases altogether, with equivalent concepts (public versus private) which are also comparable. These are the two extreme cases.

2. "context–sensitive". The researcher is aware of this sensitivity. The cases selected are in their context in which the researcher has invoked, that is 'high performance' and 'low performance' organisations. These concepts will be elaborated further in the next chapter. The contexts under study are also at the far extreme, in which the researcher would like to extract out the attribute of the organisations.

3. the use of 'typologies'. Many authors, like Ragin 1987; Brady 1995; George and McKeown 1995) promote the use of typologies to define the universe of cases. This can be seen in table 4.2

4. The researcher defines universe of cases by means of an organisational chart (figure 4.3) which is intended to have the same effect as typologies suggested by Munck (1999).

4.7 SAMPLING DESIGN

The sampling design issue is distinct for quantitative versus qualitative methods. Both methodologies have different sampling strategies.

How large should the sample size be in order for the researcher to conclude without prejudice? A large sample is not regarded by qualitative researcher as a value in itself, since it is not governed by any statistical generalisation and statistical sampling error. Patton (1990) notes that, "sample size depends on what you want to know, the purpose of the inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources……The validity,

meaningfulness and insights generated from qualitative inquiry have more to do with information-richnness of the cases selected and the observational and analytical capabilities of the researcher than with sample size." Keffe and Laurie (1995) points out that greater breadth to the scope of analysis while maintaining the depth of interpretation can be regarded as the hallmark of qualitative technique. The researcher notes that a simple increase in sample size alone does not necessarily imply that the research findings will be more valid, nor does a larger sample automatically imply that the findings can be generalised to the population under study. The core issue here is how the sample is chosen (that is whether it is random sampling or purposeful sampling) and the main purpose of the research being carried out. Quantitative research is done on a different basis as Grover (1999) insists that a sample of twenty percent (20 %) and above will enable the researcher to generalise without prejudicing the research findings. In this study, the researcher has successfully collected a sample of forty- four percent (44 %) which is regarded as reasonable according to Grover (1999). Roberts (1999) stresses that,

"It is extremely unlikely that a sample will perfectly represent the population from which it comes. Chance alone will give rise to differences between the sample and the population."

4.8 PERSPECTIVE ADOPTED

4.8.1. Burrel and Morgan Assumptions

Burrel and Morgan (1979) were the first writers to classify sociological schema for understanding streams of social science approaches to empirical research. They believed that "all social scientists approach their subject via explicit or implicit

assumptions about the nature of the social world and the way in which it may be investigated." They created a two-by-two matrix on two bipolar continuum, subjectivist versus objectivist, sociology of regulation versus sociology of radical change. This research adopts Burrel and Morgan's (1979) sociological perspective on the nature of the world. This will be elaborated further in this section.

4.8.2 Laughlin's Assumptions

The choice of methodology is important as it guides the manner in which research is conducted. Methodology according to Harvey (1990) is, "the interface between methodic practice, substantive theory and epistemological underpinnings." Epistemology is used here to refer to the presuppositions about the manner the nature of knowledge and of science that inform practical enquiry. Burrel and Morgan (1979) define it as "about how one might begin to understand the world and communicate this as knowledge to fellow human beings". Moreover, Laughlin (1995), states that choice of methodology, "involves deciding on a view about the nature of the world". This is referred to as ontology by Burrel and Morgan (1979), which is nature of the subject matter. According to Laughlin (1995) theory is " what constitutes knowledge either past or present and how it relates to the current focus of the investigation." This in turn can be seen as an epistemological issue. The choice in relation to methodology involves "the role of the observer in the discovery process and the level of theoretical formality in defining the nature of the discovery methods" (Laughlin 1995). This dictates the methodological framework. Moreover, Lauglin (1995), stresses the link between ontological assumptions and nature of the world.

He argues that a high level of prior theorising indicates that the researcher assumes that the world is material (and exists distinct from observers' projection and bias), and has high levels of generality and order. A low level of prior theorising, at the far extreme, assumes that the world is not material (it is a projection of our minds). Since projection differs from person to person, generalities are impossible. What Laughlin is trying to say is the philosophical stance of the researcher himself in making assumptions about the world, it will effect directly how data is collected. The researcher believes that the world is material and this study is intended to contribute to adding to the reservoir of knowledge. The researcher agrees with empiricist view that, "we have no idea at all other than those which come to us via our senses" (Brown 1969); therefore "any statement, apart from those of pure logic, can be known to be.....true or false only by testing them in experience." Kant (seventeenth century philosopher), on the other hand, offered different opinion regarding the empiricist view, believing that experience and reason alone cannot generate understanding, "more importance all discovery is mediated through human being making the insights generated always conditional and inevitably subjective" (Laughlin 1995). Moreover, Scroton (1982) derive arguments from Kant's by saying that:

" Objects do not depend for their existence on my knowing them; but their nature is determined by the fact that they can be perceived. Objects are not Leibnizian monads, knowable only to the perspectiveless stance of 'pure reason' nor are they Humean 'impressions' features of my own experience. They are objective, but their character is given by the point of view through which they can be known.

4.10.1 Research Stance

The researcher believes that both philosophical stances are important for our view of the world, context as well as content. The existence of both views is fundamental to the research. In view of this, the researcher has mixed the methodology to gain insight into the research problem. This view was explained at the beginning of the chapter. The researcher is acknowledge the importance of mixing methodology. Thus, the discussion above clarifies the philosophical assumptions held by the researcher in this study.

The aim of the literature review is to identify sources and extract out relevant information in an attempt to define the problem to be considered, and to develop preliminary theories (Sekaran 1992). The literature allows the researcher to be flexible in formulating tentative theory about the nature of performance measurement systems. The researcher not only looked at specific literature on performance measurement, but also at literature of related topics like services management, performance measurement, healthcare services, and hospital administration. The idea is to explore and develop a robust model/framework and to take up issues pertaining to designing specific performance measurement systems in healthcare services.

4.9 DRAWBACK OF QUALITATIVE RESEARCH

The drawback of qualitative research methods is the absence of rigid experiment control (Strauss and Corbin 1990). On the other hand, quantitative

methods can lead to the "myth of certainties" (Reason and Rowan 1987). It was only recently that several authors in the field have agreed on the combination of qualitative and quantitative research methods. Quantitative methods can ensure that researchers corroborate findings from qualitative evidence. Combining both introduces testability and context into the research and increase robustness due to the fact that the research findings can be cross validated. This increases the reliability and validity of the research findings as both methods enrich the social enquiry given that they are both complementary in nature as commented by Brennan (1999) and Remenyi (1996).

4.10 VALIDITY AND RELIABILITY DEBATE

The notion of validity has entered research in a controversial way. This has been mentioned by many authors such as Eisenhart and Howe 1992; Hammersely, 1992; and Burns 1994. However, Tschudi (1989), points out that the aim of the validation process is not to prove a perfect agreement between research results and 'reality', an endeavour that would necessarily lead to an infinite regress, but to identify possible sources of error. In light of this argument, Kelle and Laurie (1995), stresses that results can be regarded as provisionally valid if every possible precautionary measure is taken to avoid mistakes. "At best one can know what has not yet been ruled as false" (Cook and Campbell 1979). According to Burns (1994), "...we need to know what faith we can put in the data as truly indicating the person's performance." It can be defined as relative absence of errors of measurement in a measuring instrument. (Burns 1994). Reliability is synonymous with dependability,

stability, consistency, predictability and accuracy. In this thesis, the validity and reliability issues will be addressed accordingly.

4.11 CASE SELECTION

In selecting cases, the researcher has used a survey to surface out organisational effectiveness using critical success factors (CSF). This concept will be elaborated in detail in Chapter two. The survey plays a dual role. Firstly, it is used to provide general information about the healthcare industry in Malaysia. This information will be used to support a case study and secondary data, it will triangulate (Denzin, 1979), as mentioned at the beginning of this chapter.

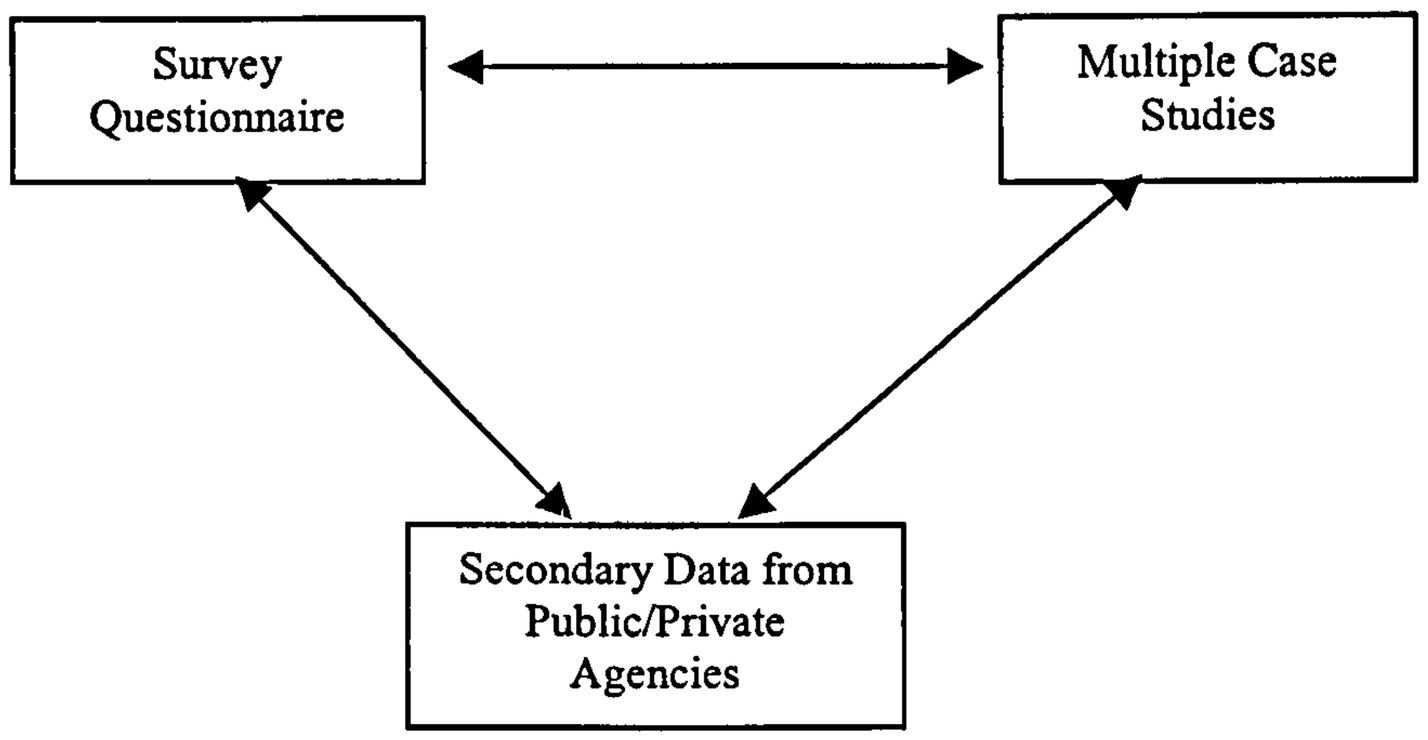


FIGURE 4.3 TRIANGULATION OF METHODOLOGY

Secondly, it is used to select cases for the case study. It is possible to use convenience sampling to select the universe of cases, which means samples are collected based on the researcher's nearest location, so that time and money are saved. However, the researcher believes that maintaining objectivity is an important aspect of the study, and stringent rules are in place to surface out the attributes from

the samples. This enforcement in case selections is called purposive sampling (Sekaran 1992). In this method, cases selected are from four different states (regions) in Malaysia. To validate this selection process, the researcher sent the result of the process to the Director-General Office, Ministry of Health for approval and the Ministry approved the study without reservation. The researcher then made travel plans to research these cases. In selecting the cases, the researcher had two levels of rules. The first is using critical success factors, in which the respondent is asked to circle the most appropriate statement that describes their organisation, using a Likert scale. This is the first stage of the selection criteria. At the next level, the researcher asked the Director-General of Health, Ministry of Health, to rank the five domains of the framework, namely patient care experience; effective delivery of care; efficiency in operations; financial stability; and capacity utilisation. Based on this ranking, the researcher has assigned a weightage for each domain. The weightage assigned by the Ministry is:

- patient care experience	(5)	high priority
- effective delivery of care	(4)	↓
- capacity utilisation	(3)	
- efficiency in operations	(2)	
- financial stability	(1)	low priority

Source: Researcher interview with Director-General of Health, Ministry of Health, Malaysia

The survey respondents were not aware of the weightage given to the CSFs; was a blind test. The hospital directors were asked to circle the most appropriate statement that describes their organisation. From the session with the Director-General, it was difficult for the Ministry to assign numbers to the domains because all the domains are important and they are very closely related. The priorities assigned are based on the current Ministry's programme to upgrade the health sector

in general, as reported in the Malaysian eighth plan, which has recently been released by the cabinet, in regard to the healthcare allocation in general and hospital expenditure specifically. Studies have shown that assigning weight to an attribute will give better and more accurate information about a perspective. Fuller and Hester (1999), have used meta-analytic techniques to measure scale using weighted and unweighted methods from research literature and found that variance and sampling error for unweighted samples is larger than the weighted samples, which basically means that giving weightage to the sample will make it more fruitful and meaningful. The weightage assigned to the domains is then multiply to the questions answered by the respondent. All these questions will be added up to a total, in which it is then divided by the number of questions responded to. In mathematical terms:

$$\text{CSF index} = \frac{(w1*csf1) + (w2*csf2) + (w3*csf3) + \ldots + (w28*csf28)}{\text{Number of questions attempted}}$$

w1 – weighting to question 1

w2 – weighting to question 2

w3 – weighting to question 3

csf1 – critical success factors questions 1 answered by respondents

csf2 – critical success factors questions 2 answered by respondents

csf3 – critical success factors questions 3 answered by respondents

This can be seen more clearly from appendices 6 and 7. It is a list of samples in this study. All respondents are assigned a number and all respondents are in this list, categorised by sectors.

The lowest CSF index indicates a 'low performance' organisation, while the highest CSF index indicates a 'high performance' organisation. In this multi-criteria method (CSF approach), the selection of cases are objective-based. From these tables (4.3 and 4.4), the researcher has chosen three hospitals that are high performance and chosen three hospitals that are low performance from each sector. This choice has been highlighted as follows.

Table 4.3 A. High Performance Organisations

	Public	Index	Private	Index
T1:	Hos 7	15.9	Hos 22	14.5
T2	Hos ***48***	***14.8***	***Hos 19***	***14.2***
T3	Hos 6	13.9	Hos 26	14.1

TABLE 4.4 Low Performance Organisations

	Public	Index	Private	Index
L1	Hos 2	7.8	Hos 84	8.7
L2	Hos ***49***	***9.1***	***Hos 24***	***9.5***
L3	Hos53	8.4	Hos 77	8.8

Six hospitals in the high performance categories and six hospitals in the low performance categories were contacted. Altogether twelve (12) hospitals were contacted to a broad base of hospitals asked to participate. Only four (4) hospitals showed interest in the study from each category.

The hospitals that emerged from this exercise were submitted to an in-depth study of their organisations. The following are the organisations that were selected. The identity of the hospitals selected will not be revealed, as their disclosure is not significant in this study.

High Performance organisations

Hos 19	HOSPITAL C	Private
Hos 48	HOSPITAL A	Public

Low Performance organisation

Hos 49	HOSPITAL B	Public
Hos 24	HOSPITAL D	Private

This critical success factors determine whether the organisations under study are "high performance" or "low performance". These criteria in the critical success factors, which have been defined in the literature, is a framework developed in this study. This framework follows the balance scorecard and joint commission attributes. This also has been elaborated in detail in the literature chapter. To validate the study, the researcher sent the name of the selected hospitals to the Director-General's Office, Ministry of Health, Kuala Lumpur. The Ministry endorsed the study and have sent positive feedback about the selection process.

The researcher found no problem with high performance organisations in participating in the case study. However, low performance organisations, are more sensitive and tact is needed in getting access and full cooperation. After careful communication, the researcher was able to persuade low performance organisations to participate by persuading them that they would be making a contribution to knowledge. This study will be reviewed by the Malaysian Ministry of Health to cross check any sensitive information not previously published, was made clear in by the letter sent by the Director of Health Office, Ministry of Health, Kuala Lumpur. Therefore, the researcher is aware of the sensitive nature of the study and careful of the findings expressed in this research.

4.12 SAMPLING FRAME OF THE STUDY

The population was taken from the Ministry of Health, Malaysia, located at Kuala Lumpur. It is the most updated version. (September 2000). The population consists of public and private hospitals with addresses, telephone, facsmile number and bed size. This is the only comprehensive list available (official documents) in Malaysia from the Ministry. From the list, two hundred and twenty-one (221) are private hospitals, (70 percent) and one hundred and two (102) are public hospitals (30 percent). This excludes special MEDICAL institutions that have been identified by the Ministry of Health. These institutions have been excluded given the nature of security needed to get access to the organisations. Basically, they are institutions for mental health patients, leprosy and other contagious diseases. These institutions are listed in appendix 5. From this, the researcher then formed a sampling frame for the study. The details of this sampling frame can be seen from Figure 4.3. This organisational chart shows the position of the research sample taken from the population. The sampling frame for this research is one hundred and eighty hospitals. This study concentrates on hospitals with more than 25 beds. This concept is derived from many literatures in healthcare (Li and Benton, 1996) in which a more sophisticated system of measuring exists in a larger facility. In Malaysia all public hospitals are 25 beds and above, while 65 percent of private hospitals (143 hospitals) have less than 25 beds and 35 percent (78 hospitals) have more than 25 beds. In line with Li and Benton (1996) regarding facilities' size, the researcher believes that size does have a positive influence on administrators' choice of systems.

The organisations under study have all developed a systematic approach to measure performance at all levels. It is worth investigating the systems at those facilities. The researcher found that most small sizes facilities are rural and district hospitals: this will be defined in the next chapter. Their purpose is to serve the small population of villagers nearby, as gazetted in official government (Kementerian Kesihatan 1970). They are mainly found in states like Sabah and Sarawak (See map figure 4.4) which are inaccessible by common modes of transport, such as buses, trains, and cars. Moreover, due to their remote locations, technology is still lagging. All acute and chronic cases are sent to general hospital in the given district (see Malaysian health system, Kementerian Kesihatan 1999). If a case cannot be resolved at the respective state hospital, it will then be referred to the Kuala Lumpur Hospital, the centre for all cases. The district hospitals do not have the equipment or the specialists to treat special cases.

There are one hundred and forty-three hospitals that have been excluded from the study due to their size (fewer than 25 beds) from three-hundred and twenty-three hospitals in the population. This reduces the population size by sixty-five (65) percent, thus the current sampling frame is one hundred and eighty hospitals with facilities of more than 25 beds. The list of small hospitals is in Appendix 1. The overall sampling frame can be seen below (Figure 4.3):

4.13 PILOT STUDY

In order to enhance the validity and reliability of the study, the researcher conducted a pilot survey on five (5) heterogeneous groups. These groups were

chosen because the researcher required feedback from multiple perspectives. Each group is distinct in the nature of its profession, thus providing an insight from diverse groups into the nature of performance measurement.

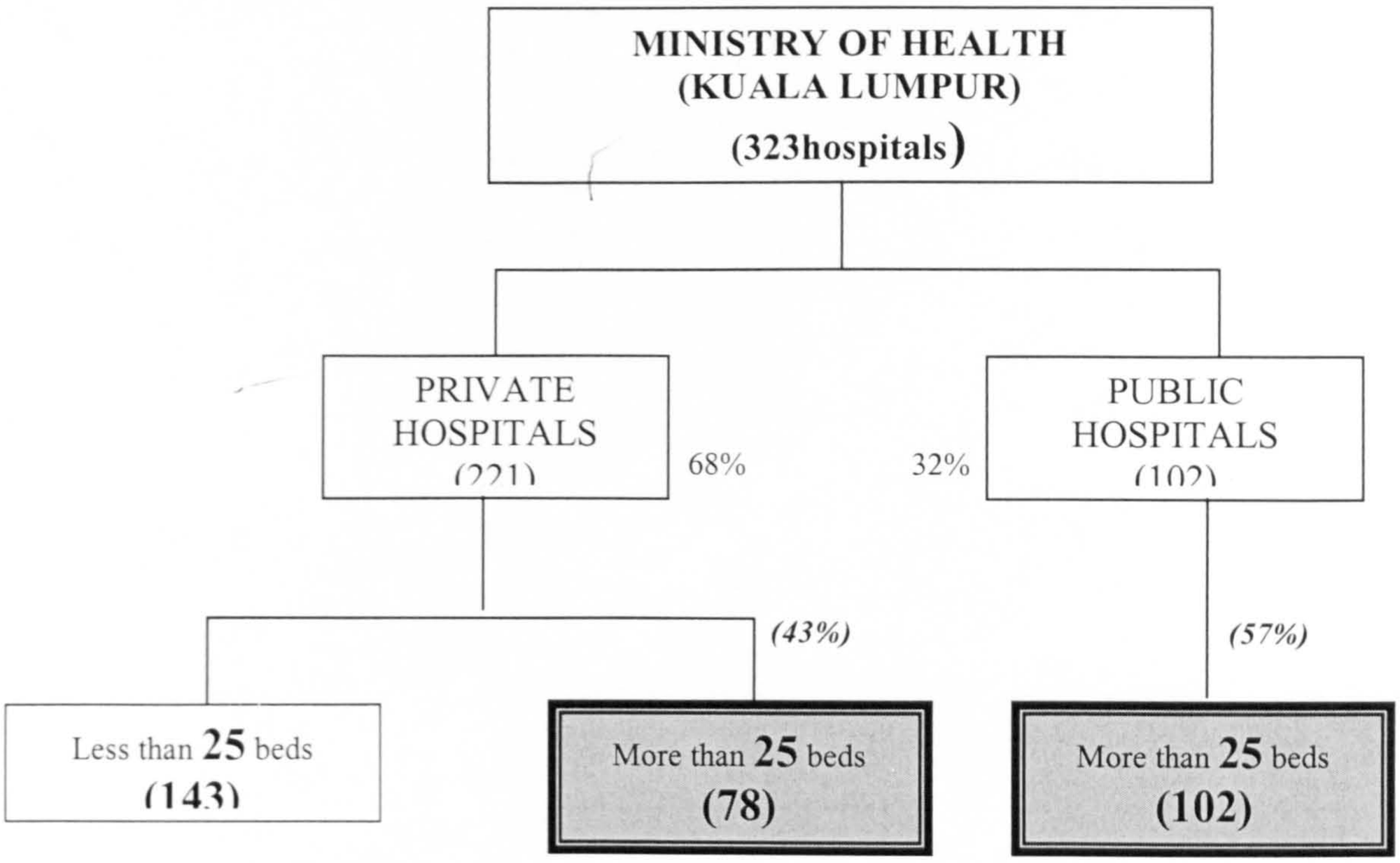


FIGURE 4.3 SAMPLING FRAME FOR MALAYSIAN HEALTHCARE INDUSTRY

Each group consists of five persons and they were given copies of questionnaires. The aim of the researcher was to test the robustness of the questions. The first group is academicians, who have done several research studies in their area of interest (personal experience). This group looked at the face validity of the research. The layout design and questions were checked against their standards so that the survey would be free of bias. The researcher followed Babbie (1990), guidelines for a good questionnaire survey.

The second group are managers who practise performance measurements. This group looked into sentence contructions as well as content in the survey. Does

the questionnaire conform to the industry norms? Are the questions posed confusing? This group gave feedback of the practices of performance measurement in Malaysia.

The third group consisted of management consultants who are in the area of performance measurements systems. This group has the most exposure in the field. They generate ideas and facilitate their implementation. The researcher is indebted to the members of this group for their insight on performance measurement systems. Their input is similar to the second group's.

The fourth group consists of hospital administrators, both public and private. This group is considered the closest to the target participants of the survey. The researcher sought the extent of relevance of the survey to the hospitals. A lot of feedback was received from this group related to the sensitivity of the questions. The professionals within the group are good at detecting survey deficiencies, since they are responsible for implementing performance measurement within the hospitals.

The fifth group is physicians, who are the subject of performance measurements policies within the hospitals, which have a direct impact on practising medicine in the organisations and the careers of the physicians. Thus, their input is important especially in the open-ended questions.

All these groups are a vital link for the researcher to establish the overall validity nature of performance measurement. The results of this pilot study has provided invaluable insight to the researcher in terms of the directions of the survey as well as the topic under study.

4.14 SURVEY METHODS (QUANTITATIVE)

4.14.1 Background

The researcher must decide which method will be most appropriate for the research question. In other words how does "the research method fit in with the research questions" (Hamilton and Davis 1992). Sampling can be defined as the "process of selecting a sufficient number of elements from the population so that by studying the sample and understanding the properties or the characteristics of the sample subjects, we will be able to generalise the properties to the population elements." (Sekaran 1992). In this thesis, sampling considerations are important to ensure the validity of the research. After changes had been made to the questionnaires, the researcher then distributed one hundred and eighty copies of the survey via mail. This is the sampling frame discussed previously. From the sampling frame, forty-three percent (43 %) account for the private sector, while fifty-seven percent (57 %) account for the public sector. The survey method is the most popular instrument used to understand the characteristics of a population. As Roberts (1999) points out, "The survey method is one of the most common approaches used in the social sciences to empirically study the characteristics and interrelations of sociological and psychological variables." Its methods and analysis have "profoundly influenced the social sciences" (Kerlinger 1986). Of late, these methods have been criticised Marsh (1982) and De Vaus (1992). According to Roberts (1999) survey methods refer to investigation where;

"systematic measurements are made over a series of cases yielding a rectangle of data;the variables in the matrix are analysed to see if they show any patterns; the subject matter is social."

The survey method is different from other methodology in the terms of data collection and data analysis. Characteristics of the survey are large scope, more coverage for the population being sampled, "naturally occurring" variation between variables (Robert 1999), and high in external validity (able to provide more realism as compared to experimental design). In discussing the survey method criticisms, DeVaus 1992 writes:

> *"I am convinced that much of the prejudice against surveys is based on a misunderstanding of what survey research is and can achieve, and that survey research need not be mindless nor as limited as much 'sociological prejudice' would have us believe".*

Moreover, there are many shortcomings of surveys that have been highlighted by Roberts (1999), Babbie (1982) and De Vaus (1992). These shortcomings are summarised in the next section. Moreover, the researcher has added the solution to the shortcomings so as it has greater impact on the reliability of the study.

4.14.2 Guidelines of Good Survey

All of the solutions and shortcomings below, cited by Roberts (1994) have been noted by the researcher. All precautionary steps have been taken in drafting and conducting the survey as proposed by Kelle and Laurie (1995). The criticism highlighted above is the works of Roberts (1994) and De Vaus (1992). In doing the study, the researcher tried to minimise error as possible. Roberts (1999) states that it is difficult to find a concise 'recipe' for undertaking surveys. The difficulties were acknowledged by many studies in the area of quantitative research methods (Marsh 1982; De Vaus 1992).

TABLE 4.5 PROBLEMS & SOLUTIONS FOR SURVEY METHOD

- Problem: Survey research just collects masses of data and provides nothing of theoretical value
  Solution: Survey researcher must be clear about what data are being collected and why data are of value before the data collection.

- Problem: Survey method is too restricted because of the limitation of a highly structured questionnaire.
  Solution: Andrews (1994) recommended procedures to be followed to develop valid and reliable data collection instruments. Combination of techniques can be used to compensate the rigidity of the structured questionnaire.

- Problem: Data collected from surveys contain so much measurement error that they are quite unreliable and the validity is extremely low.
  Solution: For good data quality, steps taken in data collection must be diligently observed, from questionnaire development to the psychometric assessment of the variables.

- Problem: surveys cannot adequately establish causal connections between variables.
  Solution: Statistical analysis are not able to 'prove' causal relations, appropriate analysis can support relation suggested by the theory.

Questionnaires are used for data collection because "..they are an efficient way of creating the matrix of data required for analysis." According to Kerlinger (1986), "mail questionnaires are criticised particularly on two of these: poor response rate and quality of responses" in which Roberts (1999) argued, "all these limitations can be mitigated by good techniques in questionnaire design and mail out procedures." Both concerns have been addressed in this study. The researcher waited for three months for responses, at the end of which only twenty-nine percent (29 %) responded. Subsequently, the researcher sent reminders via facsmile to non-respondents using a 'subtle threat' mentioning that the study is conducted with full support from the Ministry of Health. See letter faxed to respective organisation in the appendix . As a result of this, the researcher was able to increase the sample size by fifteen percent (15 %). The response rate was then forty-four percent (44.4 %),

Grover states that a twenty percent (20 %) response are considered good in a survey method.

In developing the questionnaires for the survey, the researcher tried to follow the recommendations put forward by Andrews (1994). If these procedures are closely observed, they will enhance the survey validity and reliability of the research by decreasing the method effect and residual error. In other words he advocates developing a robust instrument to test the data quality. The quality of data produced from responses has already been anticipated from the pilot study. As such the researcher modified the questionnaires to avoid confusion and double-barrel questions.

Table 4.6: Questionnaires design characteristics and recommendations. (Andrews 1994)

Survey design characteristics	Recommendations by Andrew
1. Number of answer scale categories	Use as many categories as possible.
2. 'Don't know' or 'no opinion' option	Include this option
3. Battery length (number of items group together	Keep number of items grouped together small
4. comparative/absolute questions perspective	Use comparative perspective where possible
5. full versus partial category labelling	only label end categories
6. length of introduction & questions	use medium length introduction (16-24 words) and medium to long questions (> 16 words)
7. position of item in questionnaire	data quality lower for first 25 items and those beyond 100 items. Therefore, position easy or less important items at beginning and end of questionnaire

The survey procedures adopted recommendations from Dillman (1978). The guidelines include issues relating to mailout package, ie the questionnaires, the format of the covering letter, the mailout and return envelopes along with stamps, and the techniques of assembling these materials.

4.14.3 Design of Survey Instrument

The research instrument developed for the survey (shown in Appendix 24) intends to answer the 'what' and 'how' questions. This survey aims to provide general information to the study so that it supports the findings from the case study and secondary data collected. Some of the questions are taken from Dixon et al (1990), Performance Measurement Questionnaires (PMQ). This is a diagnostic tool for organisation designed to identify the measures of performance in the organisations.

In addition to Dixon et al (1990), feedback from the pilot study was also incorporated in designing the questionnaires. The diverse characteristics of the group in the pilot study provide invaluable feedback for the design of the survey instrument.

In section C of the survey, the researcher sought to understand the nature of performance measurement systems in Malaysian hospitals. This section has been drafted accordingly to highlight certain characteristics in the population, that is embedded in the the domains; management and organisational issues that pertain to measurements; sources and uses of systems; and user satisfaction of the current systems.

In section D of the survey, the researcher concludes with an open-ended question to understand the motivation of the respondents. Basically, the researcher intends to study the design issues, as well as planning issues. These two questions are posed to understand the strengths and weaknesses of performance measurement and propose a

more compatible system that fits the organisations, as Bititci (1999) describes the dynamic nature of an effective performance measurement system.

4.15 CASE STUDY METHOD (QUALITATIVE)

4.15.1 Background

Yin (1989) defines case study as "empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident." Yin (1994) states that, "case studies as a research situation where the number of variables of interest far outstrips the number of data points." Yin indicates his preference for case study if 'how' and 'why' questions are being posed and the researcher has no control over events. Moreover, it focuses specifically on contemporary events.

The case study approach was used by many researchers to explore performance measurement systems. In trying to understand 'what' is measured, postal questionnaires are sufficient to furnish the information since the researcher is trying to research the use of measures without providing the context of performance measurement systems. However, in researching performance measurement systems there is a need for an in-depth understanding of the organisation under study, and the details of how, what and why performance are measured. (Euske et al 1993). Many authors in the field support the use of qualitative research methods in the area of performance measurement systems. Crawford (1988) and Lockamy (1991) suggest the use of the case study approach due to the lack of theoretical framework and the level of detail required to gain understanding in their studies of performance

measurement systems. Kaplan (1984) also suggests the use of case study research in the area of performance measurement.

Brignall (1993) suggests that case studies are needed to examine the processes whereby organisations have, "developed their performance measurement systems, and how they link policy to objectives, objectives to strategic plans, and strategic plans to the budgeting system." Brignall stresses that in order to study a system, specifically performance measurement, researchers need to present it in a case study because "sometimes it is presented in simplistic and deterministic terms."

4.15.2 Empirical Research on PMS

In fact the aim of this study is to find elements in the process of measuring performance in service organisations. More research has been done empirically for manufacturing than services (Fitzgerald et al 1991). The theory behind this is that the manufacturing sector has separately developed similar approaches to performance measurement based on the need to manage processes in order to maximise customer satisfaction (Zairi 1994).

A great deal of research emphasises the differences in measuring manufacturing and services. Most of the research concentrates on either manufacturing or services. This is shown in table 4.7, which lists major sources of empirical research into performance measurement found in the literature. The researcher has compiled a list of taxonomy in manufacturing and services; empirical research in performance measurement; and research done in a healthcare setting. This exercise is known as meta-analysis of the literature and has been defined earlier

in the chapter. This technique will assist the researcher to identify gaps in the literature. It is a very useful technique to cross check information in the area of interest.

Table 4.7 shows the major determinants of the research methodology used in the subject of the research. In this study, an attempt will be made to integrate research across the following:

TABLE 4.7 EMPIRICAL RESEARCH INTO PERFORMANCE MEASUREMENT

Researcher (s)	Year	Methods	LocationSize	Sector	PMS	
Coates et al	1991	Case study	US, Euro	15	All	-
Cox	1989	Case study	US	11	Mfg	-
Crawford	1988	Case study	US	06	Mfg	Yes
Fitzgerald et al	1991	Case study	UK	11	Service	Yes
Geanuracos+ Meiklejohn	1993	Case study	UK	09	All	Yes
Gen Acctg Office	1991	Survey	US	30	All	-
Gregory	1993	Case study	UK/US	05	Mfg	Yes
CIMA	1993	Survey	UK	77	Mfg	-
Lockamy	1991	Case study	US	06	Mfg	Yes
Parasuraman et al	1991	Case study	US	05	Service	-
Vora	1992	Survey	US	333	All	-
Walsh	1989	Survey	US	149	All	-

Compiled by researcher

1. Manufacturing versus Services – most of the literature surveys focus on performance measurements in manufacturing organisations. Only a handful concentrate on services, even then it was a mix between manufacturing and services. Therefore, this thesis concentrates on services as a new field of study (see chapter 3.2 for further definition of the concept of service).

2. Organisational, departmental and individual measurement. Please see table 4.8 below for working definition purposes. Two of the surveys show that measurement should be considered at all levels of the organisations. These

surveys are supported by three authors in Chapter 3, namely Euske 1993; Walsh 1989; and Geanuracos and Meiklejohn 1993). Three other studies concentrate on the organisational level (CIMA 1993; Coates et al 1993; Maisel 1992), while five studies show measurement at the process level or departmental level (Cox 1989; Crawford 1989; Kenny and Dunk 1989; Lockamy 1991; and McKinnon and Burns 1993). This thesis will concentrate on the process level in order to understand the link between performance measurement systems and organisational effectiveness. (see chapter two for further elaboration of performance measurement concept)

TABLE 4.8 WORKING DEFINITION

Performance level	Decision level	Definition
Organisation	Strategic	conceptual long-term general
Departmental	Process	functional Intermediate term general-specific more specific in steps taken
Individual	Operational	tactical Short-term Specific

3. Measures and measurement systems. From the table 4.7, measurement systems are not the focus of most research because they deal with in-depth study of the organisations. The study of measures, on the other hand, does not require context in which it operates. Thus, most research concentrates on this aspect of performance measurement.

In this thesis, performance measurement includes all financial and non-financial measures, which Kaplan and Norton call a balanced measures, used to manage continuous improvement with the aim of meeting or exceeding customer requirements. This in turn will result in organisational resource efficiency and effectiveness, highlighted in the objective of the research.

4.15.3 Benefits of Case Study Research

There are two benefits of doing case study research. The first benefit is that the researcher is able to make use of different sources of evidence such as documents, archival reports, interviews, participant observations , and physical artefacts. Other approaches, however, allow a limited source of evidence used for data collection. For example, experiment is conducted based on the measurement and recording of actual behaviour only. It does not involve systematic use of survey and verbal information. The ability to use different sources of evidence allow a triangulation (Denzin 1970) to take place. This increases the reliability and validity of the study. Second, the researcher was able to capture the reality of the situation in considerably more detail than action research (Galliers 1985). Subsequently, the researcher was able to explore ideas and concepts in performance measurement practices in Malaysian hospitals. In addition, the researcher could develop convergent lines of inquiry while the research was being conducted. Black and Champion (1985), state that this would enable one to analyse more variables than initially intended." This would be impossible in other approaches. Moreover, cases allow for multiple sources of information and materials (Simons et al 1996). In this,

many documents have been obtained from the host organisation. These documents are listed at the end of this chapter.

The case study closes the gap between theory and practice. (Simon et al 1996). The findings in the case study are widely accepted in the industry due to the style of writing cases. It is more readable than the quantitative study. The use of interview allows the researcher to gain first hand experience of the organisation under study. Thus, the researcher gains insight into contemporary issues faced by the organisation.

4.15.4 Drawbacks of Case Study Research

Nonetheless, case study is not without drawbacks. According to Spencer and Dale (1979), since case study is confined to a single event or organisation, it is difficult to obtain similar data from a statistically significant number of similar organisations.

Therefore, we tend to generalise from the individual case. In order to overcome this view, the researcher has purposely selected multiple comparable cases so that generalisation can be more meaningful and cross-case analysis can be done, thereby increasing the reliability of the results. Simons et al (1996) put it, " .....if several cases in different organisations focus on a similar theme, more reliable generalisation can be made."

4.15.5. Structured Interviews

4.15.5.1 Preliminary Case Study Format

The researcher has selected four organisations for the case study. Due to geographical and financial constraints on the researcher, the case study has to be limited to four. Once the organisations had been determined, the researcher then contacted them first by letter requesting access. A few days later, appointments were made to see the Director of each hospital to explain what was expected of them in the case study and structured interviews. A preliminary case study format was given to the director to be filled in later and collected the next day. This format was given for a reason. Due to the financial constraints, the researcher stayed on-site for three (3) days to collect all relevant information pertinent to the study and at the same time conduct interviews. This case study questionnaire was conducted for various reasons. First, the questionnaire was developed at this stage because the information needed was very structured. The presence of researcher was not needed. The respondent (hospital's director) would be able to answer with little or no help. The questions were very specific to activities conducted in the organisation. The questionnaire for the preliminary case study is divided into four (4) distinct areas:

A Performance measurement structure
B Purpose of performance measurement
C Process management
D Evaluation of current performance

These sections in the questionnaire were developed to extract a few structured responses from the directors. The motivation in setting the questionnaire was to save time at the site, as well as save time for the respondent who has a dual role as

administrator and doctor on call. Most of the directors interviewed were on the move since they have limited hours to spend. Thus, the researcher maximised time spent with the directors by conducting open-ended interviews. The following are sections of the questionnaires administered during fieldwork. It is intended to explain the rationale of the instruments.

A Performance measurement structure

The rationale of this section is to find out management practices in these organisations. In doing so, the researcher is identifying critical processes that have been managed by the organisations and what are the performance factors (Dixon et al 1989). This section has seventeen questions, mixed between close and open-ended questions.

B Purpose of performance measurement

This section concentrates on the patients' profile of the organisation's feedback mechanism. The researcher's aim was to understand the organisational control system- what type is available, how it works, and who is the process owner. There are thirteen (13) questions to surface out the purpose of measuring, with a mix of close and open-ended questions.

C Process management

The researcher's aim was to narrow down the process of measurement in organisations by looking at aspects such as the types of indicators available for the

organisation to measure its effectiveness. There are two long questions in this section which list all the indicators' that the researcher obtained from the literature.

D Evaluation of current practices

This section evaluates current organisational capabilities through four subdivisions, namely quality of information in the measurement, timeliness of measurement, relevance/utility of measurement, and dimensions of measurement. Twelve questions were posed to check the organisation's status. These questions are posed to check the current practices' ability to measure activities in the organisations. The researcher conducted the interviews after the preliminary case study format was given to the directors. The information obtained from the interviews was later cross checked with the preliminary case study questionnaires, thereby giving another form of validity. Patton (1990) noted:

> *"....the purpose of open-ended interviewing is not to put things in someone's mind but to access the perspectives of the person being interviewed. We interview people to find out from them those things we cannot directly observe."*

The purpose of this structured interview is to allow the researcher to probe into the other person's perspective. There are several reasons why the researcher prefers to use structured interviews at this stage:

1. interviewer bias – a problem encountered in conducting interviews is the introduction of bias by the interviewer himself, who may seek to lead the interviewee to a "particular set of responses to questions, and the interviewee, who may wish to present distorted pictures to the interviewer"

(Sekaran 1992). To minimise this, a more structured approach is recommended.

2. uniformity – the nature of structured questionnaires ensures that the interviews will be conducted uniformly. Discussion about related topics was kept to a minimum, while anecdotal data was restricted to open-ended questions only.

The researcher is aware that the qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable, and able to be made explicit. However, Patton (1990) points out that, "the quality of information obtained during an interview is largely dependent on the interviewer." As argued by Gummeson (1991), "...among various methods available, interviews provide the best opportunity for the study of process." With interviews, respondents are allowed to express their thoughts more freely, which consequently enables the researcher to obtain more accurate information based on their experience and knowledge. Although there is no guarantee that what the respondents say in the interview is a true account of what they actually do, whether they are intentionally lying or whether they genuinely believe what they are saying, this also applies to other methods (Oppenheim 1982).

The researcher prefers to use audio tape to record the interview sessions, as do many authors in the field (Boyd 1985; and Babbie 1995). However, in taping for the case study, the researcher found that the respondents tend to feel uneasy, reserved and covert in many instances, even though assurances were given on data

confidentiality. As Boyd (1985) points out, a tape recorder reduces the accuracy of reported responses. From the researcher's experience, when the tape recorder was put away, respondents were more open and participated more freely. Therefore, the researcher transcribed the interviews from note and summarised the sessions immediately after the interviews.

4.15.5.2 Case Study Questionnaires

These are questions posed to the directors with regard to performance measurement practices in Malaysian hospitals. The researcher intends to chart out the process flow of each organisation under study for areas highlighted in the performance measurement models at the beginning of the study. Areas of concern are continuous improvement mechanism, control/feedback mechanism, and measurement mechanism (patient/staff). These mechanisms play a role in strategic directions of the organisation at the departmental (process) level. These are questions posed to the directors in trying to understand the nature of performance measurement in Malaysia.

1. What is the hospital's vision, missions and goals?
2. How is attention directed to areas with high leverage for improvements?
3. What feedback or control system exists to ensure goals are achieved?
4. Why is performance measured that way?
5. How do you know patients are satisfied with services rendered?

After charting the process, it is the researcher's intention to understand the underlying reason performance was measured and relate to theories in the area. The interviews lasted ninety minutes each. The researcher is very grateful for all the assistance of the directors and their eagerness to help in every way possible, despite their busy work schedule.

Some directors are open in terms of giving information for research. These directors realise that the Ministry will act as a censor board to filter whatever information they deem confidential and not suitable for public scrutiny. From the researcher's experience in the field, the private sector is more cautious in releasing information since they are in fierce competition with other organisations. However, they are very interested in the findings of this study, as the information could be of use in positioning their organisation among other players in the healthcare industry. The public sector was very cooperative as a result of the researcher's strong recommendation from the Ministry (see letter of approval in appendix).

4.15.6 Ranges of Documentary Evidence Collected

The following are ranges of documents collected from the six organisations studied. These organisations are studied in more detail in the next chapter. Eisenhardt (1989) states that providing evidence is crucial for empirical studies.

1. Organisational chart

2. Top management composition
   - Board of directors
   - Management levels

3. Minutes of the meeting (if possible)
   - Board of directors
   - Departmental unit
   - Operational unit

4. Financial statements
    - Balance sheet
    - Profit and loss account

5. Audit report (internal versus external)
    - Medical/non-medical issues
    - Financial/non-financial issues
    - Service recovery issues
    - Improvement issues
    - Other pertinent issues discussed

6. Quality assurance report

7. Report on:
    - Salary by category
    - Breakdown of cost by department/division
    - Waiting time for patient
    - Waiting time for machine
    - Scheduling for machine by hours/cases
    - Maintenance schedule/calibration
    - Cashflow by department
    - Complaints from patients by department
    - Admission (inpatient/outpatient) by department
    - Admission in Accident and Emergency department
    - Surgery report by months by department
    - Complication (in general) by month by department
    - Inventory consumption by month by department
    - List of fast/slow moving stock by department
    - List of generic drugs prescribe to patient
    - Process flow from each department

8. Schedule for:
    - Pathology laboratory by cases/hour
    - Radiology by cases/hour
    - Operating theatre

9. Annual report from each organisation under study

10. Information system used:
    - Capability
    - How it is linked
    - What type
    - Who access it
    - Level of security

11. Quality circle
    - Project listing, currently implemented
    - Cost saving
    - Area of concerns eg innovation

4.15.7. Interviewing process

The interviews took place at the interviewee organisations, on a face-to-face basis, as recommended by McNeil (1990). Arrangements were made by calling the directors ahead of time, as suggested by Boyd (1985) Usually, the interview was done in the morning. The interviews varied from person to person. The time given varied from director to director, and ranged from forty-five (45) minutes to ninety (90) minutes. On some occassions the researcher had to wait for hours because the directors either had a morning programme or were on-call somewhere in the facility, since administrators are also practising physicians.

4.15.8 Data Analysis

4.15.8.1 Survey Method

To give confidence on the sample collected from the survey, the researcher performed a construct validity. This test validates the quality of the sample obtained from the population, whereby the researcher tests for non-response bias of the sample to the population. Robert (1999) suggests that to increase the validity of the data, a closer look at the non-response characteristics of the survey is needed. This approach compares associations between the known characteristics of both respondents and non-respondents. This is a tests for the non-response bias , using number of organisations, location (by state) and sectors (see chapter five).

Blalock (1991) argues that too much attention to sophisticated statistical analysis detracts from the need to produce the quality data in the first place. As he observed:

Technical fixes alone, therefore, cannot be relied on to resolve one's theoretical problems, nor can inadequate or missing data be compensated for by statistical tour de force.

4.15.8.2. Case Study Method

Eisenhardt (1996) proposed cases to be analysed in two stages. The first stage uses using within case analysis. This involves analysing data from each individual organisation to explore the richness of the data acquired and to connect data with reality, in order to develop testable, relevant and valid theory. Within-case analysis requires the researcher to produce rich descriptive summaries of each organisation in a uniform manner. This is the reason protocol development exists, i.e. to assist the researcher to systematically structure the case study based on the data obtained from fieldwork. This protocol development has helped the researcher to argue in terms of replication logic from a multiple case standpoint, thereby increasing the reliability of the study. Replication logic will be explained in next section. In analysing individual cases the researcher tries to map out performance measurement activities in that particular organisation.

The second stage is cross-cases analysis, involving comparison of cases, in order to discern patterns that emerge as a result of differences and similarities among organisations. The researcher also will attempt to explain these differences in the next chapter.

4.16 ASSUMPTIONS OF THE STUDY

It is necessary to examine all underlying assumptions and potential limitations to a study of the nature outlined in this research (Easterby-Smith et al 1991). The

objectives of the research have been mentioned at the beginning of the chapter. The researcher aims to understand the nature of performance measurement practices in Malaysia. In order to achieve this goal, the assumptions formulated are stated as follows:

1. Different organisational settings have different performance measurement systems, depending on the environment that organisations interact within. Performance measurement is a dynamic process. (Bititci 1989)

2. All organisations, whether they realise it or not, have some form of measurement system. Traditionally, accounting records serve as a tool for organisations to measure their effectiveness, as it is a language of business. Currently, more sophisticated measurement tools are available to keep managers up-to-date in their performance. It is a prerequisite, if one is determined to drive the organisation to new heights of excellence.

4.17 LIMITATION OF THE STUDY

1. Given the geographical position of Malaysia, see figure 4.3, the states of Sabah and Sarawak are separated by the South China Sea. Thus, it is not covered by the case studies. However, survey method was employed in those states. Since Sabah and Sarawak are far away from the Federal territory, Kuala Lumpur, development is slow in these states, especially the healthcare sectors. The exclusion of these states does not effect the validity

and reliability of the study, in which results of CSF index do not emerge in both categories, 'high performance' and 'low performance'.

2. It is not practical to gain access to many hospitals in Malaysia to satisfy statistical sampling theory when conducting case study methods. This phenomenon is well understood in social science research, and has led to the development of systematic techniques for developing case studies (Eisenhardt 1989; Bun, 1994; Yin 1989 and many other writers in the field). Only four organisations have been selected for the case studies. This selection has been elaborated in detail at the beginning of the chapter.

3. The researcher is aware that organisations change at some point in time. The findings in this research are only applicable at the particular moment in time. Change in organisations is inevitable (Daft 1983) due to the nature of organisation, management structure and consequently performance measurement. The research is a 'snapshot' of performance measurement during the period of the study.

4. All fieldwork was conducted in Malaysia, and as such findings may not be applicable to organisations outside Malaysia. Moreover, it is within the context of developing countries only.

5. The framework developed in this study are for healthcare services only. This is due to the complexity and multidimensional perspective unique to the industry. This perspective has been elaborated in detail in the literature.

Therefore, performance measurement needs to be studied over time, given the dynamic nature of the organisations' interaction with the system.

4.18 SUMMARY

This chapter outlines the research design and methodology used in conducting the research. The study employs two types of approaches, namely survey (providing basis for case selection and contextual background for the case studies) and multiple case studies (explicating a framework for performance measurement systems in healthcare services).

The research follows a logical and methodological approach in order to ensure that data collection, analysis and presentation of empirical data will have validity and reliability. The overall design can be seen in figure 4.1 of this chapter.

CHAPTER 5
DATA ANALYSIS FOR SURVEY

5.1 INTRODUCTION

A survey was conducted in this study for two reasons: first, to make an objective selection of hospitals for the case study, and second, to furnish a comprehensive background of the population, especially the characteristics of the healthcare industry in Malaysia. The survey explores the perceptions of the users of performance measurement systems, that is directors of the organisations, an area that is not covered in the literature of performance measurement (see Chapter Two).

The survey aims to assess the level of involvement from both sectors in the measurements of performance. The successful treatment of performance measurement is largely determined by the communication of measurement - that is what is being measured and how is it measured, as suggested by Lynch and Cross (1991) and Kaydos (1991). Moreover, the researcher tries to identify a 'gap' in the measurement system for both public and private sectors, to acknowledge the discrepancies that exist, and to suggest possible solutions to improve performance measurement of both important sectors of the Malaysian economy.

The researcher identified 323 hospitals from the sampling frame obtained from the Ministry of Health, Malaysia. The population were reduced to 180 hospitals (please refer to Chapter Four), in which 102 (57%) were public hospitals and 78 (43%) were private hospitals. The detailed breakdown can be seen in Chapter Four. The researcher sent 180 postal questionnaire packages with self-addressed return envelopes, covering letter and the booklet of questionnaires as suggested by

Babbie (1982), in order to achieve the best possible response.The survey was returned by 86 out of 180, which gives a response rate of 47.8%. The study uses of the number of beds to determine the size of the organisation, as suggested in much of the literature on healthcare (Li and Benton, 1996; Boaden et al 1999; Buchanan and Wilson 1996 and many others). Moreover, in Malaysia, specialist (state) and non-specialist (district) hospitals are differentiated by the number of beds available (please refer to Chapter Three). The detail responses by state and by sectors can be seen from Appendix 11. If the responses are based on the number of beds as suggested in the literature, then the actual response rate is slightly higher, that is 68.4 percent. The high response is due to the researcher's efforts to ensure higher responses from larger hospitals by sending out reminders, facsmiles and site visits (by appointment) across the nation. In this way, more reliable results could be tabulated. The survey successfully captured 66% (57 hospitals) of responses from the public sector and 34% (29 hospitals) from private sector. If the calculation is based on the number of beds available, 88% of the respondents are from the public sector and 12% are from the private sector. The favourable responses of the public sector due to the researcher's ability to obtain a letter of reference (see page 284) from the Deputy Director-General of Health, Ministry of Health, Kuala Lumpur. As a result of this, the public sector was obliged to participate in the study, and therefore an unbiased result can be drawn from this research project as 80% of the population are public hospitals and 20% are private. This proportion corresponds with the samples collected, as shown in the test of independence in the next section.

In what follows, the researcher explores and analyses the survey in some depth. The following tables are a breakdown of samples according to sectors and

states that have a high response rate. Table 5.2 shows that the state of Perlis has the highest response rate (100%), followed by Melaka (94.5%) and Pulau Pinang (78.4%). The table also illustrates the high response from the public sector as opposed to the private sector.

Table 5.1 *MALAYSIAN STATE RESPONSE RATE*

		Number of beds			
			Samples		combined
No	State	Population	Public	Private	Percentage
1.	Johor	3,230	1,813	184	61.8
2.	Kedah	2,344	1,537	212	74.6
3.	Kelantan	1,493	1,036	0	69.4
4.	Kuala Lumpur	4,601	2,810	466	71.2
5.	Melaka	1,580	906	591	94.5
6.	Negeri Sembilan	1,475	934	0	63.3
7.	Pahang	1,691	637	94	43.2
8.	Perak	4,607	3,283	100	73.4
9.	Perlis	404	404	0	100.0
10.	Pulau Pinang	3,558	2,049	739	78.4
11.	Sabah	2,632	1,639	75	65.2
12.	Sarawak	3,142	1,926	0	61.3
13.	Selangor	2,821	1,076	423	53.1
14.	Terengganu	1,193	861	0	72.2
	Total	**34,771**	**20,911**	**2,880**	

Table 5.2 *SECTORIAL RESPONSE RATE BY RANKING*

Ranking	Total Response		Public		Private	
1	Perlis	(100%)	Kelantan	(100%)	Melaka	(39.5%)
2	Melaka	(94.5%)	Negeri Sembilan	(100%)	Selangor	(28.2%)
3	Pulau Pinang	(78.4%)	Perlis	(100%)	Pulau Pinang	(26.5%)
4	Kedah	(74.6%)	Sarawak	(100%)	Kuala Lumpur	(14.2%)
5	Perak	(73.4%)	Terengganu	(100%)	Kedah	(12.8%)
					Pahang	(12.8%)

This chapter is devoted to exploring the results of the fieldwork done in Malaysia. It provides internal information (contentual aspects) on the performance measurement system, as this is pertinent in the thesis, in which the case study will

furnish the contextual background of the study. The combinations of elements, contentual and contextual, give comprehensiveness to the study.

This chapter is divided into seven components. The first component (section 5.2.1) is dedicated to measuring non-response bias in the empirical data using some statistical analysis. This is to ensure that the data does not present bias outcomes. The second component (section 5.2.2) deals with presenting a demographic profile of respondents and organisations. The third component (section 5.2.3) is the measurement domain which will explain the characteristics of low and high performers in the organisation. The fourth (section 5.2.4) and fifth (section 5.2.5) components dealt with performance measurement within the organisation; the sixth (section 5.2.6) and seventh (section 5.2.7) components, deal with models and infrastructure of a measurement system. The last component (section 5.2.8) highlights the characteristics of measurement in the study.

5.1 SURVEY ANALYSIS

5.1.1 Non-Response Bias

In the survey, it is important that the sample collected should represent the population under study. This is crucial as inferences are made to generalise the findings of this study. There are two ways of looking at these. The first is to compare the population under study and samples collected, in order to see if the population and the sample collected share the same characteristics.

Table 5.3 ***COMPARISON OF POPULATION AND SAMPLE***

	Public	Private
Population (exc <25beds)	60%	40%
Population(incl >25beds)	80%	20%
Samples collected	**88%**	**12%**

From table 5.3, it appears that samples collected is of similar proportion to the population under study, which means that the sample is a good representation of the population. The second method is to test statistically the relationship between population and sample using Chi-square statistics (also called test of independence).

Ho : There is no association between variables (statistically independent)

H1 : There is association between variables (statistically dependent)

Table 5.4 ***TEST OF ASSOCIATION***

States	Number of beds Population	Samples
Johor	3,230	1,997
Kedah	2,344	1,749
Kelantan	1,493	1,036
Kuala Lumpur	4,601	3,276
Melaka	1,580	1,497
Negeri Sembilan	1,475	934
Pahang	1,691	731
Perak	4,607	3,383
Perlis	404	404
Pulau Pinang	3,558	2,788
Sabah	2,632	1,714
Sarawak	3,142	1,926
Selangor	2,821	1,499
Terengganu	1,193	861
TOTAL	***34,771***	***23,795***

Chi-square statistics : 3340.324

Critical value : 21.026

Table 5.4 shows that, at 5 % significance level, the chi-square is more than the critical value, in which we reject the null hypothesis, indicating that the sample is not different from the sampling frame (ie population) and that systematic bias is unlikely. In other words, the sample collected represents the population.

5.1.2 RESPONDENT DEMOGRAPHIC

This section will outline the findings of the survey about the demographics of the respondents, covering organisational profile, healthcare workers and respondents' financial position.

5.2.2.1 Organisational Profile

From the survey tabulated, 92.8 percent of the respondents are holding top management positions, and as such are the policy/decision makers (see table 5.5). The positions held are Hospital Directors (77.1%), Deputy Directors (5.8%) Chief Executive Officers (6.0%), General Managers (2.4%), Chairman of the Board (1.2%), and Corporate Partners (1.2%). It is important that top management is committed to participate in the study, as most management literature has successfully linked organisation success to top management commitment to continuous improvement. This also has implications for the reliability of the study since the respondents are the actual users of performance measurements and hold the highest authority in the organisations.

Table 5.5 *RESPONDENTS' POSITIONS BY PERCENTAGE*

Designation	freq	%
Director	64	77.1
Deputy Director	4	5.8
Chief Exec Officer	5	6.0
Chairman	1	1.2
Partner	1	1.2
General Manager	2	2.4

In terms of years spent in the job for the top management, 47% of respondents have 1 to 7 years of experience, and 37% have more than 7 years, with public sector top experience of 30 years. With their experience and expertise in the healthcare industry, they constitute a reservoir of knowledge, which will enhance understanding of performance measures and measurement systems in hospitals generally.

The facilities under study have been differentiated by the number of beds available for patients as mentioned in the previous section. The following are categories used for the study which have been discussed extensively in the literature on healthcare. (see Chapter Two).

Table 5.6 CATEGORIES USED IN THE STUDY

Number of beds	Hospital size
25 – 50	small
51 – 100	medium
101 – 200	large
201 – 400	very large
more than 400	extra large

The following are beds available for the samples of public and private sectors. As for table 5.7 shows that 51% of the public sector hospitals are large facilities, while small hospital (of manageable size) account for 72% of the private

sectors. In the study, 20% of the sample consists of small hospitals, 26% medium sized hospitals and 54% large hospitals.

Table 5.7 *NUMBER OF BEDS BY SECTORS*

	Public		Private		Total	
Number of beds	**freq**	**%**	**freq**	**%**	**freq**	**%**
25 – 50	2	3.6	15	51.7	17	19.8
51 – 100	17	30.9	6	20.7	23	26.7
101 – 200	8	14.5	4	13.8	12	14.0
201 – 400	5	9.1	4	13.8	9	10.5
more than 400	25	41.8	0	-	25	29.1
Total	57		29		86	

The respondents were asked the number of years the hospital had been in operation. 51% of the hospitals had been in operation for more than 30 years, and surprisingly 21% of the hospitals have existed more than 50 years. The majority of these hospitals are in the public sector (95%) and 5% are private sector. These hospitals have existed since the British colonisation in the 1900s and survived through World Wars I and II. One prime example is Hospital Changkat Melintang in Perak, which is 200 years old. 11% of the hospitals have been in operations for less than 5 years and they are all in the private sectors (100%). The private sector is a new sector which emerged in response to the overwhelming demand for medical services. Their importance lies in assisting the public sector and alleviating some of the pressure on it. Their role in the Malaysian healthcare system has been detailed in Chapter Three.

Table 5.8 shows that 49% of hospitals surveyed have been in operation for more than thirty years, and that 42% of the hospitals are large hospitals. The significance of the difference between small and large is in organisation and

management. Each sector incorporates different strategies to ensure organisational effectiveness.

Table 5.8 ***HOSPITALS' YEARS OF OPERATIONS***

	← Number of beds →					
Years of operations	**25-50**	**51-100**	**101-200**	**201-400**	**>400**	**Total**
Less than 5 years	3	4	1	1	0	9
6 to 15 years	7	8	2	2	1	20
16 to 30 years	5	3	2	1	2	13
31 to 50 years	0	2	2	2	18	24
More than 50 years	0	4	5	3	4	16
TOTAL	15	21	12	9	25	82

TABLE 5.9 : HOSPITAL OPERATIONS BY SECTORS

	Public		Private		Total	
Operations	freq	%	freq	%	freq	%
< 5 years	0	-	9	34.6	9	11.1
6 to 15 years	9	16.4	11	42.3	20	24.7
16 to 30 years	8	14.5	4	15.4	12	14.8
31 to 50 years	23	41.8	0	-	23	28.4
> 50 years	15	27.3	2	7.7	17	21.0
TOTAL	**55**		**26**		**81**	

As most of the hospitals are long established and large facilities their practices are worth looking into. How are performance measurement activities practised in such facilities? The researcher believes that an understanding of the process is crucial in determining performance measurement practices. The researcher will employ the CSF approach on these hospitals to surface out high and low performing organisations and this will be analysed in the next chapter.

The respondents were asked if the organisation practised any form of measurement system, and the survey reveals that hospitals do practise some forms of measurement systems (85.7%). Surprisingly, 14.3% deny the existence of any form

of measurement system, although all managers should know that accounting is the rudimentary language of

TABLE 5.10 : PERFORMANCE MEASUREMENT PRACTICES BY BED SIZE

Number of beds	Implemented freq	percent	Not implemented freq	percent	Unsure freq	percent
25 to 50 beds	9	12.5	7	70.0	1	50
51 to 100 beds	20	27.8	2	20.0	1	50
101 to 200 beds	12	16.7	0	-	0	-
201 to 400 beds	9	12.5	0	-	0	-
More than 400 beds	22	30.6	1	10.0	0	-
TOTAL	**72**		**10**		**2**	

business (traditional performance measures). No organisation can exist without performing accounting functions. This ignorance is probably due to the newness of performance measurement in the healthcare sector, and Malaysian health administrators are just beginning to grasp the basics of measurement. 95% of respondents in the public sector claim to have used/practised performance measurement systems, while 69% of the private sector claim so. However, the private sector is more sceptical than the public, since 31% of the respondents deny the practice while only 5% of the public do so.

5.2.2.2 Healthcare Workers

Table 5.11 *NUMBER OF EMPLOYEES (%) BY BED SIZE*

	←——Number of beds ——→					
No of employees	**25-50**	**51-100**	**101-200**	**201-400**	**>400**	
Less than 49	1	-	-	-	-	
50 to 199	1	15	2	-	-	
200 to 349	-	1	6	1	-	public
350 to 499	-	-	-	2	-	
More than 500	-	-	-	1	6	
TOTAL	**2**	**16**	**8**	**4**	**6**	
Less than 49	11	1	-	-	-	
50 to 199	2	2	-	-	-	
200 to 349	-	2	1	1	-	private
350 to 499	-	-	2	2	-	
More than 500	-	-	-	1	-	
TOTAL	13	5	3	4		

In general, the Malaysian healthcare sector faces an acute shortage of healthcare workers across organisations, from physicians, registered nurses and technicians to non-clinical workers. As can be seen from Chapter Three 1999 statistics show a ratio of a approximately 1 doctor into 1,500 patients, and similar shortages are reported for nursing and other allied health professions. Detailed statistics of the Malaysian healthcare sector can be seen in Chapter Three. The survey reveals that despite the shortages, public hospitals employ a bigger workforce than the private sector, especially in the very large facilities. 75% of the public hospitals with very large facilities employs more than 500 staff, while the private sector is more cost conscious than the public sector, employing a smaller workforce to cope with organisational demand (84.6%), that is for small size hospital less than 50 staff are employed at any one time. The healthcare workload, in both public and private sectors, is discussed in the next section. The private sector is able to pay better wages and compensation to their employees through charging the patient for

every service rendered, with the aim that the patient/client gets value for money. This strategy is not practical in the public sector due to the number of patients, with admission running into thousands per day making it impossible to differentiate their service (source: research interview). Moreover, the public only pays a marginal cost (1% of the total medical cost), with the government subsidising 99% of the cost. (Information obtained from research interview, the Director-General Office, Ministry of Health). In addition, decisions are centralised at Ministry level, over which respondents have no control.

The disparity between the public and private sectors shown above is due to the social obligation of the public sector to service the entire health population and be accountable for public health per se, while the private entities are targeted towards the affluent market, those who can afford to pay for their health care. Table 5.11 illustrates the distribution of workforce between public and private sectors according to the organisation's size.

Table 5.12 NUMBER OF HOSPITALS CATEGORISED BY NURSES BY BED SIZE

	← Number of beds →					
No of nurses	**25-50**	**51-100**	**101-200**	**201-400**	**>400**	
< 100	2	15	6	-	-	
101 – 299	-	-	1	3	-	
300 – 499	-	-	-	-	-	public
400 – 699	-	-	-	-	5	
> 700	-	-	-	-	3	
Total	**2**	**15**	**7**	**3**	**8**	
< 100	13	4	-	1	-	
101 – 299	-	1	3	-	-	
300 – 499	-	-	-	1	-	private
400 – 699	-	-	-	-	-	
> 700	-	-	-	-	-	
Total	**13**	**5**	**3**	**2**	**0**	

Nursing is an important aspect of healthcare delivery, according to Naylor (1998), Malloch (1999), and many other authors. Nurses play a major role to ensure the delivery quality of healthcare. 60% of nurses are in the public sector and the majority of the hospitals surveyed have fewer than 100 nurses employed (73%). The private sector employs fewer than 500 nurses in large facilities (9%) whereas the public sector has more than 700 nurses in large facilities (32%). Both sectors have been faced with acute shortages for years and the government is well aware of the problems. This problem is rampant for organisation with larger facilities as shortages is inevitable. From table 5.12, an average of approximately two beds per nurse are allocated for all facilities. This policy has overloaded and exhausted the nurses due to the fact that nursing entails not only attending to patients' need but also countless other administrative duties, especially in larger facilities.

5.2.2.3 Financial Position

What is the financial standing of the hospitals surveyed? Table 5.13 presents the budget, expenditure and revenue of the public and private hospitals; as this is sensitive information, not all hospitals responded to the question, especially private hospitals. Do hospitals in Malaysia overspend? This section will try to explore this question in greater detail.

Table 5.13 *OVERALL PERFORMANCE OF HEALTHCARE'S FINANCIAL STANDING* 1997, 1998 and199

Value RM (million)	Budget	%	Expenditure	%	Revenue	%	
Less than 1	4	4.6	3	3.3	60	75.0	public
1.1 – 5.0	43	49.4	41	45.6	13	16.3	
5.1 – 10.0	17	19.5	23	25.6	3	3.8	
10.1 – 50.0	13	14.9	14	15.6	4	5.0	
50.1 – 100.0	10	11.5	9	10.0	-	-	
more than 100	-	-	-	-	-	-	
Total	**87**		**90**		**80**		
less than 1	9	24.3	10	20.4	5	10.9	private
1.1 – 5.0	16	43.2	19	38.8	18	39.2	
5.1 – 10.0	6	16.2	-	-	6	13.0	
10.1 – 50.0	3	8.1	16	32.7	14	30.4	
50.1 – 100.0	2	5.4	3	6.1	2	4.3	
more than 100	1	2.7	1	2.0	1	2.2	
Total	**37**		**49**		**46**		

From table 5.13, both sectors of the economy have the same experience, in that expenditure exceeds revenue. For the public sector, 46% of hospitals reported expenditure of 1 to 5 million, 26% reported RM 5 to 10 million, 16% reported RM 10 to 50 million, and 10% reported RM 50 to 100 million. In the private sector, the majority of hospitals reported RM 1 to 5 million (39%), 33% reported RM 10 to 50 million and at the upper extreme, 2% spend more than RM 100 million. This suggests that the public sector fails to contain its healthcare costs compared to the private sector. The private sector has the same phenomena only less severe, they are able to control expenditure better than the public.

Table 5.14 : Hospitals Expenditure by Years

RM(Million) Expenditure	**1997**		**1998**		**1999**		
	freq	**percent**	**freq**	**percent**	**freq**	**percent**	
Less than 1 million	1	3.4	1	3.3	1	3.2	Public
1.1 to 5.0 million	16	55.2	14	46.7	11	35.5	
5.1 to 10.0 million	5	17.2	8	26.7	10	32.3	
10.1 to 50.0 million	4	13.8	4	13.3	6	19.4	
50.1 to 100.0 million	3	10.3	3	10.0	3	9.7	
More than 100 million	0	-	0	-	0	-	
TOTAL	**29**		**30**		**31**		

Less than 1 million	4	28.6	3	18.8	3	15.8	
1.1 to 5.0 million	5	35.7	6	37.5	8	42.1	
5.1 to 10.0 million	0	-	0	-	0	-	
10.1 to 50.0 million	4	28.6	6	37.5	6	31.6	Private
50.1 to 100.0 million	1	7.1	1	6.3	1	5.3	
More than 100 million	0	-	0	-	1	5.3	
TOTAL	**14**		**16**		**19**		

Table 5.15 : Hospitals Budget by Years

RM(Million) Budget	1997 freq	1997 percent	1998 freq	1998 percent	1999 freq	1999 percent	
Less than 1 million	1	3.6	1	3.4	2	6.7	
to 5.0 million	16	57.1	15	51.7	12	40.0	
5.1 to 10.0 million	4	14.3	6	20.7	7	23.3	Public
10.1 to 50.0 million	4	14.3	4	13.8	5	16.7	
50.1 to 100.0 million	3	10.7	3	10.3	4	13.3	
More than 100 million	0	-	0	-	0	-	
TOTAL	**28**		**29**		**30**		
Less than 1 million	4	33.3	3	25.0	2	15.4	
1.2 to 5.0 million	4	33.3	5	41.7	7	53.8	
5.1 to 10.0 million	3	25.0	2	16.7	1	7.7	Private
10.1 to 50.0 million	0	-	1	8.3	2	15.4	
50.1 to 100.0 million	1	8.3	1	8.3	0	-	
More than 100 million	0	-	0	-	1	7.7	
TOTAL	**12**		**12**		**13**		

In terms of budget, both sectors have similar characteristics. In the public sector most budgets are within the range of RM 1 to 5 million (50%), 20% range from RM 5 to 10 million, 15% from RM 10 to 50 million, and 12%from RM 50 to 100 million. In the private sector, on the other hand, most budgets are within the range of RM 1 to 5 million (43%). 24% of budgets are less than RM 1 million, 10% range from RM 5 to 10 million, and exceptionally, there is a budget that is more than RM 100 million (2.7%). There is only a single hospital in the private sectors that has a budget of more than RM 100 million, with very large facilities.

It appears from table 5.15, that the public sector budget increased steadily from 1997 to 1999 reflecting government programme to erect new state and districts hospitals nationwide in the Malaysian Seventh and Eighth Plan. Please see Chapter Three for the development of hospitals across the nation. The increase is also attributed to the public subsidy which provides medical care at a nominal fee of RM1, which is equivalent to £0.17 per patient inclusive of all drugs and pharmaceutical products. 99% of this cost is borne by the government.

Table 5.16 : Hospitals Revenue by Years

RM(Million) Revenue	1997 freq	1997 percent	1998 freq	1998 percent	1999 freq	1999 percent	
Less than 1 million	19	34.6	21	77.8	20	74.1	
1.1 to 5.0 million	5	19.2	4	14.8	4	14.8	
5.1 to 10.0 million	1	3.8	1	3.7	1	3.7	Public
10.1 to 50.0 million	1	3.8	1	3.7	2	7.4	
50.1 to 100.0 million	0	-	0	-	0	-	
More than 100 million	0	-	0	-	0	-	
TOTAL	**26**		**27**		**27**		
Less than 1 million	2	14.3	2	13.3	1	5.9	
1.2 to 5.0 million	5	35.7	5	33.3	8	47.1	
5.1 to 10.0 million	3	21.4	2	13.3	1	5.9	
10.1 to 50.0 million	3	21.4	5	33.3	6	35.3	Private
50.1 to 100.0 million	1	7.1	1	6.7	0	-	
More than 100 million	0	-	0	-	1	5.9	
TOTAL	**14**		**15**		**17**		

In terms of revenue, public hospitals have the worst performance, that is low revenue generation with very large facilities. The government is 'losing money' in the long term, although sustainability is crucial in setting healthcare policies. Over the years, 75% of public hospitals were only able to generate revenue of less than RM 1 million even in larger facilities (please refer to figure 5.1). Table 5.15 show that no hospital generated a revenue of more than RM 50 million, even the very large facilities. The private sector has a more stable revenue. 39% of hospitals reported

are within the range of RM 1 to 5 million, and 31% within RM 10 to 50 million. Surprisingly, 2.2% of hospitals reported generated more than RM 100 million; this is a medium size facility. Table 5.15 shows that 69.2% of public sector hospitals with very large facilities generate revenue of RM 1 to 5 million, 8% RM 5 to 10 million, and 23% RM 10 to 50 million. The government is losing money in larger facilities because it is only able to generate on average RM 10,000 per bed per year, which gives to RM 27.40 (equivalent to £4.57) revenue generated on a daily basis (source: case study interview). This is unacceptably low. There is no doubt that the government needs to do something to align its strategy so that services can be offered in an effective and efficient manner. "The government is not in the business of making profits but only of recovering costs." (Director of hospitals in an interview). If this continues, no cost will ever be recovered in the short or long run. The private sectors on the other hand has an equal distribution of revenue across organisations, with 16.7% of large facilities generating RM 5 to 10 million, 33.3% generating RM 10 to 50 million 33.3% generating RM 50-100 million and none more than RM 100 million. On average, the private sector is able to generate RM 300,000 per bed per year, which is equivalent to RM 821.90 per bed per day (source: case study interviews). This is equivalent to £137. In comparison to the public, the private sector can provide 'augmented' services to the patient, as the patient pays 30 times more than in the public sector. Due to the liberal policy of the government, the private sector is able to charge patients in line with costs, thus cost containment strategy works well within the organisation.

Table 5.17 ***REVENUE (%) BY BED SIZE***

Revenue	Number of beds 25-50	51-100	101-200	201-400	>400	
Less than 1 million	100	97.7	69.2	62.5	-	public
1.1 to 5.0 million	-	2.3	-	37.5	69.2	
5.1 to 10.0 million	-	-	23.1	-	7.7	
10.1 to 50.0 million	-	-	7.7	-	23.1	
50.1 to 100 million	-	-	-	-	-	
More than 100 million	-	-	-	-	-	
TOTAL	**100**	**100**	**100**	**1000**	**100**	
Less than 1 million	19.2	-	-	-	-	private
1.2 to 5.0 million	69.2	-	-	-	-	
5.1 to 10.0 million	11.6	30.0	-	16.7	-	
10.1 to 50.0 million	-	70.0	80.0	33.3	-	
50.1 to 100 million	-	-	20.0	33.3	-	
More than 100 million	-	-	-	16.7	-	
TOTAL	**100**	**100**	**100**	**100**	**0**	

In summary, it is interesting to note that the public sector revenue is constant over the years, which shows that the government policy has been in providing funding to the public. However, expenditure has increased steadily over the years, especially in the range of RM 5 of 10 million and RM 10 of 50 million. Inflation set in 1998 and 1999 during the economic crisis. While the private sector was not isolated from the crisis, it did have strategies available to it, such as the ability to adjust prices in line with inflation figures. Revenue increased especially in the range of RM 1 to 5 million and RM 10 to 50 million. While expenditure decreased steadily especially in the range of RM 10 to 50 million, the rest showed no increase or decrease, which demonstrates the ability of the private sector to cope with the economic crisis. Details can be seen in figure 5.1

The question is, how does the public sector sustain its operations given the enormous amount of losses each year? It sustains its operations through funding from the government, which accounts for 98.2% (see table 5.18), while the private

sector, which does not have funds from the government, operates its hospitals by means of earnings generated from operations (64.9%) and from investors (27%), who have a vested interest in the running of the hospitals. Since the private sector is partly funded by earnings (operations), it is important that it maintains its level of service in terms of efficiency and effectiveness, and this can be seen from the fact that most of it has a favourable index of CSF. This is also a survival strategy in a highly competitive environment.

Table 5.18 : HOSPITAL FUNDS BY SECTORS

	Public		Private		Total	
Funds	freq	percent	freq	percent	freq	percent
Government	54	98.2	1	2.7	55	59.8
Investors	1	1.8	10	27.0	11	12.0
Earning	0	-	24	64.9	24	26.1
Donation	0	-	2	5.4	2	2.2
TOTAL	**55**		**37**		**92**	

5.2.3 MEASUREMENT DOMAIN

5.2.3.1 Background

Before we proceed to examine the characteristics of the domains, the researcher believes that the measurements (also known as constructs) presented in this study need to be assessed, even though from the interviews (case study) and survey, all domains are found to be significant and indispensable in the opinion of the directors as well as Ministry of Health, Malaysia. The researcher tested the construct using Cronbach alpha, developed by Cronbach in 1951. It is used to assess the internal

consistency of the construct, and construct validity. Cronbach alpha measures the internal consistency of contructs, which basically means the degree to which items in the set are homogeneous (Ngai and Cheng 1997). This is the most widely used reliability test. Factor analysis is then used to discern and quantify the construct used to assess the performance. As Kinnear and Gray (1999) says, the greater the value or loading on a factor, the more important is that factor in accounting for the correlations between that test and others. The validity and reliability issues have been discussed in Chapter Four.

5.2.3.2 Analysis of Domain

Table 5.18 shows descriptive statistics of the five constructs. The researcher looked for the magnitude of skewness and kurtosis, of which all the constructs demonstrate less than 2.0. Kurtosis is a measure of the extent to which observations cluster around a central point (SPSS 10.0 package). Nunnally (1978) pointed out that any observation that falls under 0 to 2 is a normal distribution. In this study, all observations are well within a reasonable range of normality.

Table 5.19 TEST OF NORMALITY

Construct	*Mean*	*Std Dev*	*Skewness*	*Kurtosis*
Patient Care Experience	3.359	1.339	-0.381	1.051
Effective Delivery of Care	2.663	1.235	0.593	-0.117
Capacity Utilisation	2.625	1.169	0.500	0.052
Efficiency in Operations	2.998	1.191	-0.087	-0.709
Financial Stability	3.267	1.169	0.003	-0.199

Using principal component analysis (PCA), the researcher aims to find the underlying structure of the measurement domains posed in this study, thereby gaining a better understanding of performance measurement. According to Ngai and Cheng (1997) PCA can be used for detection and interpretation of relationships among a given set of quality data. There are several tests to determine if PCA can be of use to measure the construct. The first test is advocated by Hair et al (1995), who advise that "the researcher generally would not factor analyse a sample of fewer than 50 observations, and preferably the sample size should be 100 or larger". In this study there are 86 samples. The second test is advocated by Chatfield and Collins (1980) who suggest that, " the researcher should look at the correlation matrix and observe any natural groupings of variables with high correlations". Ngai and Cheng (1997) pointed out that, "correlations greater than 0.2 used in the analysis are statistically significant at the 0.01 level" (N=100). In this case, visual inspection reveals that 240 of 378 correlations are significant at the 0.01 level. Thus, the majority of the correlations are significant at the 0.01 level. The KMO index (Kaiser-Meyer-Olkin) is a test of sampling adequacy (Kinnear and Gray 1997), in which an index of 0.5 indicates that it is satisfactory for factor analysis to proceed. In this study the KMO index is 0.69.

In table 5.21, the eigenvalues clearly show that seven common factors are present by using the criterion "eigenvalue greater than 1" and this is confirmed by scree plot. Based on this evidence, a seven-factor solution would appear to be acceptable. According to Bargozzi and Yi (1988), the fact that all indicators are significantly related to the corresponding construct, indicates that scales for the

respective construct possess convergent validity. The researcher will attempt to explore the analysis further. Table 5.20 shows Cronbach Alpha of each factor.

Table 5.20 TEST OF RELIABILITY (CRONBACH ALPHA)

Construct	No of items	Cronbach Alpha
Patient care experience	6	0.821
Effective delivery of care	6	0.724
Capacity utilisation	5	0.722
Efficiency in operation	5	0.723
Financial stability	6	0.711

Table 5.21 shows the results of factor analysis. From the table, it seems that factor 3 and factor 5 can be combined since both factors deal with cost issues. Meanwhile, factors 6 and 7 should be combined due to the marginal eigenvalue and because these factors are concerned with operations issues. After reconciliation, 5 factors emerged as the existing construct but with different factors. Kinnear and Gray (1997) suggest that the names of factors are based on the characteristics of the cluster.

Table 5.21 ANALYSIS OF EMPIRICAL DATA

Item	Critical factors	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Facto7
1.	patient satisfaction	.830						
2.	patient perceptions	.853						
3.	personnel hospitality	.793						
4.	waiting time	.792						
5.	complaint from staff	.847						
6.	complaint from patient	.816						
7.	complication (after) surgery	.692						
8.	complication (during) surgery	.695						
9.	mortality rate	.880						
10.	readmission rate	.459	.475					
11.	total cost per case			.770				
12.	surgery rate	.643	.455					
13.	length of stay	.713						
14.	patient cost per day			.876		.453		
15.	outpatient size						.569	
16.	information system usage				.678			
17.	comm.. across function	.885						
18.	liquidity						.670	
19.	profitability					.645	.504	

20.	revenue generation				.626		.410	
21.	operational cost					.866		
22.	productivity (ROTA)						.642	
23.	productivity (eff/eff)		.624					
24.	occupancy rate				.759			
25.	equipment utilisation	.813						
26.	workforce utilisation		.859					
27.	facilities utilisation		.919					
28.	managing inventory		.419				.437	
	Eigenvalue	10.268	3.203	1.980	1.614	1.459	1.149	1.089
	Cum var explained (%)	36.7	48.1	55.2	60.9	66.2	70.3	74.2

Note: We adopt the convention advocated by Nunnally (1978), that factors are generally named based on loadings greater than or equal to 0.4. Only the significance loadings (greater than 0.4) are shown in this table.

The following names are proposed:

Table 5.22 PROPOSED FACTOR NAMES
Factor 1: Patient and Service Encounter
Factor 2: Service Provision
Factor 3: Cost
Factor 4: Information System
Factor 5: Operations Management

The new factors are shown in table 5.22. In consolidating the factors, the researcher exercised two rules as suggested by Nunnally, that is to consider factor loading of more than 0.4 as significant and combined marginal factor loading of less than 1. As a result of this, table 5.23 shows the new factors after grouping. This issue will be further discussed in Chapter Seven as part of the researcher's recommendations for future research as different constructs will hypothetically yield different outcomes.

Next, the respondents were asked to rate from 1 (strongly disagree) to 5 (strongly agree) the critical success factors (CSF) derived from the measurement domains using Likert scale. In this study, old domain's are used to survey the

respondents as the new construct developed from factor analysis is part of the future recommendations contained in the study.

Table 5.23 FACTOR ANALYSIS AFTER GROUPING

Item	Critical factors	Factor1	Factor2	Factor3	Factor4	Factor5
1.	patient satisfaction	.830				
2.	patient perceptions	.853				
3.	personnel hospitality	.793				
4.	waiting time	.792				
5.	complaint from staff	.847				
6.	complaint from patient	.816				
7.	complication (after) surgery	.692				
8.	complication (during) surgery	.695				
9.	mortality rate	.880				
10.	length of stay	.713				
11.	comm.. across function	.885				
12.	equipment utilisation	.813				
13.	readmission rate		.475			
14.	surgery rate		.455			
15.	productivity (eff/eff)		.624			
16.	workforce utilisation		.859			
17.	facilities utilisation		.919			
11.	total cost per case			.770		
14.	patient cost per day			.876		
19.	profitability			.645		
21.	operational cost			.866		
16.	information system usage				.678	
20.	revenue generation				.626	
24.	occupancy rate				.759	
15.	outpatient size					.569
18.	liquidity					.670
22.	productivity (ROTA)					.642
28.	managing inventory					.437

The domains have been discussed extensively in the methodology section (see Chapter Four). The following are CSFs of the respective domains. The measurement domains have a combined positive and negative statement so that the response would not be skewed to either polarity. This phenomenon is discussed extensively in the service literature by prominent authors such as Parasuraman et al, Asubonteng, et al and many other authors in the field.

Table 5.24 CRITICAL SUCCESS FACTORS BY DOMAINS

Domain One		***Statement***
1A.	Patients are satisfied with medical and support services	Positive
1B.	Patients perceived services of highest quality and integrity	Positive
1C.	Personnel are friendly and courteous	Positive
1D.	Waiting time, in general, is low	Positive
1E.	Complaints from staff are high	Negative
1F.	Complaints from patients are low	Positive
Domain Two		
2A.	Complication rate during surgery is low	Positive
2B.	Complication after surgery is high	Negative
2C.	Mortality rate, in general, is high	Negative
2D.	Readmission rate, in general, is high	Negative
2E.	Total cost per case is low	Positive
2F.	Surgery rate is high	Positive
Domain Three		
3A.	Occupancy rate is high	Positive
3B.	Equipment is just lying idle	Negative
3C.	Workforce is not fully utilised	Negative
3D.	Facilities is not fully utilised	Negative
3E.	Inventory is manageable (little wastage)	Positive
Domain Four		
4A.	Length of stay, in general, is high	Negative
4B.	Patient cost per day is low	Positive
4C.	Outpatient size is large	Positive
4D.	Information system usage is extensive	Positive
4E.	Communication between functions is distorted	Negative
Domain Five		
5A.	Assets that can be converted to cash quickly (liquidity) are high	Negative
5B.	Income earned after deducting expenses (profitability) is low	Negative
5C.	Revenue generated from operations is high	Positive
5D.	Cost incurred in operations is high	Negative
5E.	Productivity (return on total assets) in general is low	Negative
5F.	Productivity (efficiency & effectiveness) from operations is high	Positive

Then the responses were categorised according to favourable, unfavourable and indifference indices. These indices are percentage points in the survey. For example, for the positive statement, 4's and 5's on the scale are added to form a favourable index, while 1's and 2's form an unfavourable index and 3's are an indifference index. The reverse is done for the negative statement. The result of this

can be seen in table 5.25. The intepretation of indices can be seen in more detail in the next section.

TABLE 5.25 ***CRITICAL SUCCESS FACTORS BY SECTORS***

Critical Success Factors	Favourable		Indifferent		Unfavourable	
	Public	Private	Public	Private	Public	Private
DOMAIN 1 : PATIENT CARE EXPERIENCE						
Patient satisfaction	61.1	85.1	9.3	11.1	29.6	3.7
Patient perceptions	59.3	77.7	9.3	18.5	31.5	3.7
Personnel hospitality	55.6	92.6	13.0	3.7	31.5	3.7
Waiting time	37.8	70.3	26.4	18.5	35.9	11.1
Complaint (staffs)	48.2	77.0	9.3	11.5	42.6	11.5
Complaint (patients)	51.9	61.6	14.8	23.1	33.3	15.3
DOMAIN 2 : EFFECTIVE DELIVERY OF CARE						
Compl. rate during surgery	54.3	80.0	39.1	12.0	6.5	8.0
Compl. rate after surgery	29.6	76.0	66.7	16.0	3.7	8.0
Mortality rate	55.5	92.3	5.6	3.8	38.9	3.7
Readmission rate	84.6	92.6	11.5	3.7	3.8	3.7
Total cost per case	26.0	44.4	26.0	29.6	48.0	25.9
Surgery rate	50.0	26.9	11.4	15.4	38.6	57.7
DOMAIN 3 : CAPACITY UTILISATION						
Occupancy rate	27.8	51.8	22.2	33.3	50.0	14.8
Equipment utilisation	59.2	77.8	9.3	18.5	31.5	3.7
Workforce utilisation	77.8	70.4	9.3	25.9	13.0	3.7
Facilities utilisation	76.0	70.3	11.1	25.9	13.0	3.7
Inventory management	83.4	74.1	9.3	18.5	7.5	7.4
.DOMAIN 4 : EFFICIENCY IN OPERATIONS						
Length of stay	50.0	81.5	13.0	7.4	37.0	11.1
Patient cost per day	32.0	55.5	48.0	33.3	20.0	11.1
Outpatient size	86.3	44.4	11.8	25.9	2.0	29.6
Info system usage	24.1	34.3	29.6	11.4	46.3	32.6
Comm. across functions	51.0	76.0	11.3	16.0	37.7	8.0
DOMAIN 5 : FINANCIAL STABILITY						
Liquidity ratio	55.8	40.0	38.5	32.0	5.7	28.0
Profitability ratio	10.4	25.0	6.3	29.2	83.4	45.9
Revenue generation	8.4	48.0	4.2	28.0	87.5	24.0
Operational cost	12.0	19.2	16.0	34.6	72.0	46.2
Productivity (ROTA)	40.0	30.7	12.0	38.5	48.0	30.7
Productivity (effect/effic)	80.4	66.6	17.6	29.6	2.0	3.7

Table 5.25 CORRELATION MATRIX OF CRITICAL FACTORS

		Pts	ptp	php	wtt	cfs	cfp	cds	cas	mtr	rar	tcp	sgr	los	pcp
Patient satisfaction	(pts)	1.000													
Patient perceptions	(ptp)	.902*	1.000												
Personnel hospitality	(php)	.879*	.903*	1.000											
Waiting time	(wtt)	.737*	.733*	.694*	1.000										
Complaint (staff)	(cfs)	.711*	.769*	.654*	.635*	1.000									
Complaint (patient)	(cfp)	.835*	.790*	.777*	.693*	.661*	1.000								
Complication (during)	(cds)	.529*	.563*	.500*	.506*	.669*	.530*	1.000							
Complication (after)	(cas)	.542*	.490*	.477*	.523*	.579*	.649*	.468*	1.000						
Mortality rate	(mtr)	.760*	.831*	.794*	.741*	.754*	.753*	.487*	.619*	1.000					
Readmission rate	(rar)	.175	.276*	.177	.168	.341*	.197	.372*	.279*	.352*	1.000				
Total cost per case	(tcp)	.391*	.428*	.447*	.438*	.300*	.555*	.282*	.447*	.392*	.115	1.000			
Surgery rate	(sgr)	.538*	.551*	.488*	.669*	.466*	.717*	.303*	.429*	.661*	.089	.414*	1.000		
Length of stay	(los)	.526*	.628*	.514*	.540*	.631*	.604*	.606*	.506*	.642*	.369*	.411*	.563*	1.000	
Patient cost per day	(pcp)	.265*	.217*	.294*	.138	.160	.359*	.045	.300*	.154	.016	.709*	.214*	.11	1.000
Outpatient size	(ops)	.216*	.247*	.307*	.379*	.152	.273*	.069	.086	.317*	.016	.130	.384*	.219*	.042
Information system usage	(isu)	.350*	.416*	.355*	.233*	.239*	.412*	.256*	.186	.263*	.023	.367*	.092	.324*	.163
Communication across functions	(caf)	.709*	.714*	.664*	.651*	.731*	.749*	.621*	.702*	.727*	.380*	.374*	.547*	.589*	.320*
Liquidity ratio	(lqr)	.188	.225*	.195*	.176	.240*	.143	.184	.025	.212*	.077	.080	.110	.250*	.083
Profitability ratio	(pfr)	.303*	.351*	.261*	.380*	.262*	.417*	.255*	.181	.341*	.119	.303*	.459*	.272*	.076
Revenue generation	(rvg)	.132	.183	.199*	.208*	.150	.104	.231*	.209*	.164	.152	.282*	.061	.214*	.301*
Operational cost	(otc)	.137	.170	.052	.151	.254*	.197*	.154	.203*	.185	.165	.397*	.213*	.157	.233*
Productivity (ROTA)	(prt)	.376*	.408*	.350*	.294*	.266*	.346*	.168	.321*	.296*	.047	.247*	.085	.171	.161
Productivity (efficiency/effectiveness)	(pee)	.291*	.317*	.236*	.348*	.259*	.280*	.197	.106	.328*	.132	.078	.414*	.370*	.009
Occupancy rate	(ocr)	.318*	.356*	.345*	.118	.240*	.161	.280*	.239*	.230*	.223*	.152	.154	.130	.128
Equipment utilisation	(equ)	.717*	.748*	.664*	.641*	.678*	.672*	.488*	.576*	.723*	.344*	.333*	.450*	.536*	.189*
Workforce Utilisation	(wfu)	.212*	.214*	.193*	.159	.110	.220*	.048	.011	.219*	.277*	.079	.397*	.262*	.138
Facilities Utilisation	(fcu)	.247*	.242*	.251*	.252*	.055	.273*	.046	.094	.244*	.318*	.110	.504*	.218*	.088
Inventory management	(ivm)	.232*	.163	.189*	.017	.150	.270*	.170	.038	.021	.166	.183	.116	.015	.254*

* indicates correlations significant at the 0.01 level

		ops	isu	caf	lqr	pfr	rvg	otc	prt	pee	ocr	equ	wfu	fcu	ivm
Patient satisfaction	(pts)														
Patient perceptions	(ptp)														
Personnel hospitality	(php)														
Waiting time	(wtt)														
Complaint (staff)	(cfs)														
Complaint (patient)	(cfp)														
Complication (during)	(cds)														
Complication (after)	(cas)														
Mortality rate	(mtr)														
Readmission rate	(rar)														
Total cost per case	(tcp)														
Surgery rate	(sgr)														
Length of stay	(los)														
Patient cost per day	(pcp)														
Outpatient size	(ops)	1.000													
Information system usage	(isu)	.056	1.000												
Communication across functions	(caf)	.219*	.208*	1.000											
Liquidity ratio	(lqr)	.054	.016	.137	1.000										
Profitability ratio	(pfr)	.275*	.227*	.306*	.326*	1.000									
Revenue generation	(rvg)	.182	.310*	.198*	.189	.225*	1.000								
Operational cost	(otc)	.057	.175	.245*	.089	.523*	.062	1.000							
Productivity (ROTA)	(prt)	.167	.260*	.297*	.042	.185	.102	.354*	1.000						
Productivity (efficiency/effectiveness)	(pee)	.403*	.184	.166	.150	.279*	.003	.056	.160	1.000					
Occupancy rate	(ocr)	.022	.360*	.194*	.040	.001	.368*	.038	.235*	.018	1.000				
Equipment utilisation	(equ)	.169	.379*	.763*	.205*	.270*	.191	.143	.334*	.280*	.476*	1.000			
Workforce Utilisation	(wfu)	.200*	.023	.052	.267*	.136	.083	.075	.045	.414*	.105	.085	1.000		
Facilities Utilisation	(fcu)	.256*	.058	.104	.225*	.141	.162	.104	.046	.497*	.215*	.034	.857*	1.000	
Inventory management	(ivm)	.006	.131	.335*	.028	.139	.176	.050	.205*	.218*	.117	.184	.173	.187	1.000

* indicates correlations significant at the level 0.01

The following are tables that demonstrate the mean value for each CSF for both public and private sectors.

Table 5.27 ***MEANS FOR CRITICAL SUCCESS FACTORS BY SECTORS***

	Public	Private
Patients are satisfied with medical and support services	3.3	4.2
Patients perceived services of highest quality and integrity	2.9	4.1
Personnel are friendly and courteous	3.2	4.2
Waiting time, in general, are low	2.6	3.9
Complaint from staff are high	3.5	2.0
Complaint from patients are low	2.9	3.7
Complication rate during surgery is low	3.7	4.4
Complication rate after surgery is high	2.0	1.9
Mortality rate, in general, is high	3.1	1.3
Readmission rate, in general, is high	2.0	1.6
Total cost per case is low	2.8	3.4
Surgery rate is high	3.5	2.7
Length of stay, in general, is high	2.8	1.8
Patient cost per day is low	3.2	3.7
Outpatient size is large	4.5	3.7
Information system usage is extensive	2.7	3.1
Communication between functions is distorted	2.7	1.9
Liquidity is high	2.3	2.9
Profitability is low	4.4	3.4
Revenue generated from operations is high	2.0	3.3
Cost in curred in operations is high	3.9	3.5
Productivity (return on total assets) is low	3.3	3.0
Productivity (effectiveness/efficiency) from operations is high	4.2	3.8
Occupancy rate is high	2.9	3.6
Equipment is just lying idle	2.9	1.6
Workforce is not fully utlised	1.8	1.9
Facilities is not fully utilised	1.8	1.9
Inventory is manageable (little wastage)	4.0	4.2

1: strongly disagree 2: disagree 3: indifference 4: agree 5: strongly agree

From the measurement domain listed above, the researcher has isolated responses with positive feedback from the respondent. All of these CSFs have a score of more than 70% favourable index. 70% satisfactory level was chosen as the cut-off point because it has been practised in the industry (interview during case study). The results are shown in table 5.15.

In the public sector, six critical factors receive positive responses, while the private receives fifteen critical factors. In overall performance, from table 5.28, the private sectors capabilities are perceived as better than the public with an index of 53.6% (15/28), whereas the public is only 21.4% (6/28). We can conclude that there is much room for improvement for both sectors especially the public sector which is performing below average.

Table 5.28 ***POSITIVE RESPONSES FOR CRITICAL SUCCESS FACTORS***

No.	Public	Private
1	Workforce utilisation	Complication rate during surgery
2	Facilities utilisation	Complication rate after surgery
3	Outpatient size	Communication between functions
4	Productivity (efficiency/effectiveness)	Equipment utilisation
5	Inventory	Workforce utilisation
6	Readmission rate	Facilities utilisation
7		Length of stay
8		Readmission rate
9		Mortality rate
10		Patient satisfaction
11		Personnel hospitality
12		Patient perception
13		Complaint from staff
14		Inventory
15		Waiting time

The following is a summary of the results tabulated according to domains of the CSF. To reinforce the values of table 5.29, this analysis details which of the measurement domains are perceived by the directors as needing improvement. This in turn will give a clear picture of the problem of the sectors in terms of their individual performance. Domains that after adding up (public + private) are still below 70% are considered to perform below par in the perceptions of the respondents. Therefore, the industry needs to focus its efforts on providing strategic plans to upgrade the standards of particular aspects of healthcare.

Table 5.29 DOMAINS ACHIEVEMENT BY SECTORS

		Sector(%)	*Industry (%)*
Domain 1: Patient Care Experience			
	Public: 0/6	**0.0**	**41.0**
	Private: 5/6	**83.0**	
Domain 2: Effective Delivery of Care			
	Public: 1/6	**16.7**	**41.7**
	Private: 4/6	**66.7**	
Domain 3: Capacity Utilisation			
	Public: 3/5	**60.0**	**70.0**
	Private: 4/5	**80.0**	
Domain 4: Efficiency in Operations			
	Public: 1/5	**20.0**	**30.0**
	Private: 2/5	**40.0**	
Domain 5: Financial Stability			
	Public: 1/6	**16.7**	**8.4**
	Private: 0/6	**0.0**	

Table 5.29 demonstrates that the Malaysian healthcare industry has a long journey ahead in terms of providing services to the population. All domains except capacity utilisation are below 50%; the worst is financial stability. Moreover, it is common knowledge that healthcare costs are rising everywhere in the world. This affects even developed countries like the United States, Europe, United Kingdom and others. In the third world, cost becomes an obstacle to maintaining a respectable position. This is the reason why performance measures are crucial for maintaining an acceptable level of services as it is the only differentiating aspect of the business.

Utilising hospital capacity is not a problem since there are in total 323 hospitals operating in Malaysia servicing at full capacity a population of 23 million (infants, children, adults and the elderly). It is obvious that managing resources is critical in a third world country such as Malaysia. The severity and intensity of the problems have been thoroughly highlighted in Chapter Three of the thesis.

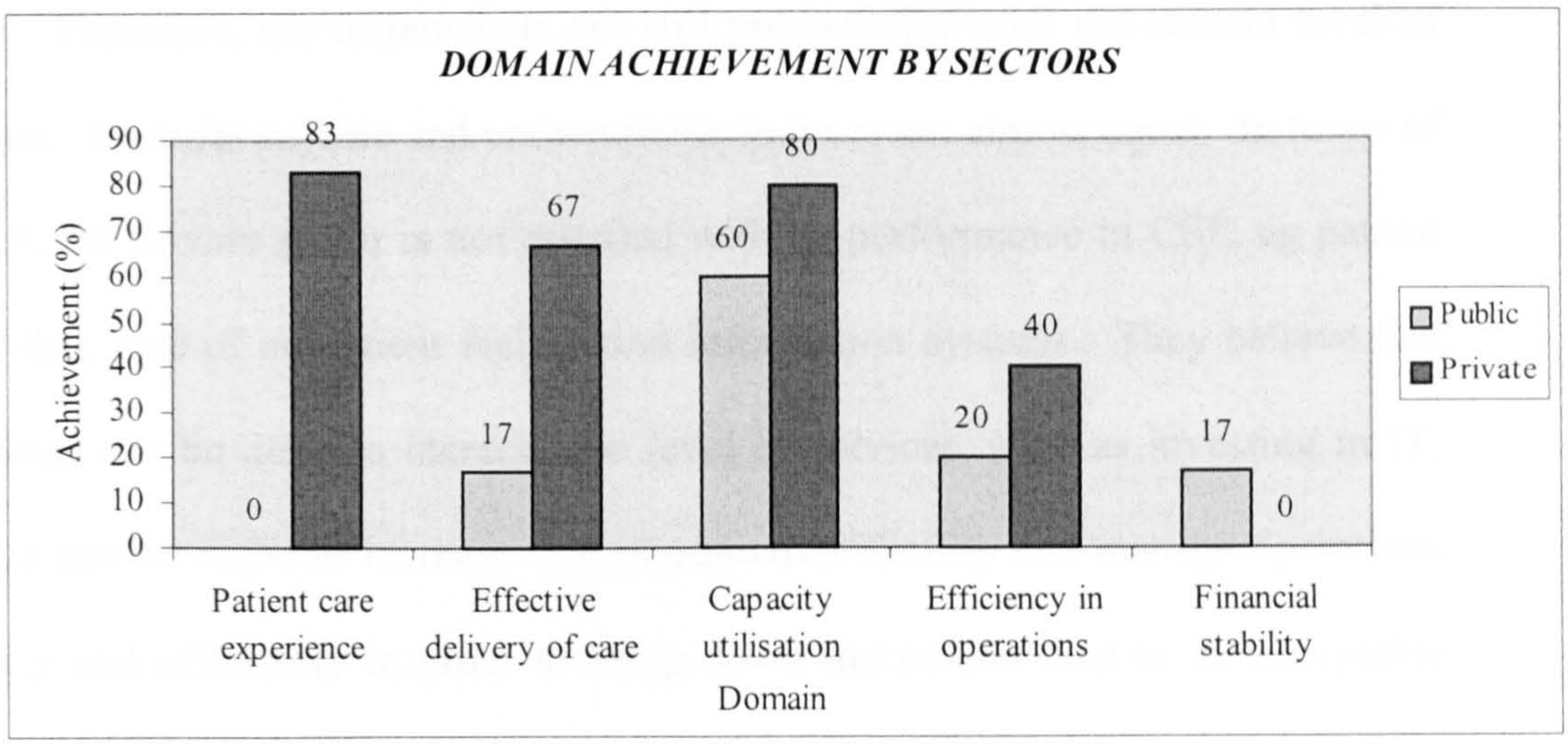


FIGURE 5.1 DOMAIN ACHIEVEMENT BY SECTORS

For the public sector, domain 1 is still far from satisfactory. The directors feel that the public is still not satisfied with the services of the public hospitals. This is reinforced by with the unfavourable CSF index in this domain (see table 5.25). All the unfavourable results are above 30% with staff complaints the highest (42.6%). This is a true picture in the public sector since there is a high turnover in all categories of healthcare workers (interview by researcher). These healthcare workers with their experience and expertise have joined the private sector which offers better wages, compensation and working conditions. From the summary above, we can see that all domains for the public sector have very low (unacceptable) percentages except capacity utilisation (domain 3). This is because public health facilities have a very high density and are overcrowded. They do not have problems of usage since the facilities offer treatment and medication at the lowest cost.

The private sector on the other hand, portrays a totally different picture from the public sector. All domains achieve satisfactory services except domain 4 and 5, for the reason that they are still struggling to contain their cost in whatever way

possible. Therefore, the respondents are still not satisfied with the current level of operations. Their favourable and unfavourable indexes are almost equal. In terms of domain 4, the private sector is not satisfied with its performance in CSF, eg patient cost per day, size of outpatient facility and information systems. They believe that more things can be done to increase the level of services, such as investing in IT, creating a market niche to increase size of outpatient facility and manage operations effectively and efficiently in order to bring down the patient cost to an acceptable level. Compared to the public sector, the unfavourable index is quite low. Moreover, the private sector has a satisfactory performance because it focuses on non-financial measures, eg patient care, delivery of care and efficiency in operations.

The following section demonstrates domain specific activities. The respondents were asked to rank the importance of the measurement domains. Then they were evaluated on the achievements of specific domains. The results are as follows:

Table 5.30 Domain Importance-Achievement by Sectors

Public		Private	
Importance	**Achievement**	**Importance**	**Achievement**
Patient care experience experience	Capacity utilisation	Patient care experience	Patient care
Effectiveness of care	Efficiency in operations	Effectiveness of care	Capacity utilisation
Capacity utilisation	Financial stability	Financial stability	Effectiveness of care
Efficiency in operations operations	Effectiveness of care	Capacity utilisation	Efficiency in
Financial stability	Patient care experience	Efficiency in operations	Financial stability

Both sectors perceived patient care experience and delivery of care as highly important domains. These are the non-financial domains that have great influence on services. The researcher further analysed association between the critical factors and

the achievements so far. The analysis reveals that what is important is not necessarily emphasised or achieved throughout the organisation. This finding coincides with Schmenner's articles on "Suspect, Gaps and False alarms".

The researcher believes that emphasis (perception of government service) is not placed accordingly. This can be seen in the public sector where the directors feel that patient care experience should be given top consideration in government policy. However, when we evaluate the domain, capacity utilisation achieved better scoring than patient care experience. Why this is so has been explained in depth in Chapter Three. The private sector achieved what they set out to do, that is patient care. Patient care experience is important to them since they are market-driven organisations. Due to this, they have improved their service tremendously; this can be seen from table 5.16, showing that most of the domain is above 60%.

5.2.3.3 High and Low Performers by Sectors

In this section, we will discuss measurement domains of respondents, in which ranking is assigned to the domains used. From the CSFs listed, the tables below show the highest favourable index for both public and private sectors. The overall performance of the healthcare industry is as follows:

Table 5.31 ***TOP FIVE PERFORMERS BY SECTORS***

Ranking	Public		Private	
1	Outpatient size	(86.3%)	Personnel hospitality	(92.6%)
2	Readmission rate	(84.6%)	Readmission rate	(92.6%)
3	Productivity from operations	(80.4%)	Mortality rate	(92.3%)
4	Workforce	(77.8%)	Patient satisfaction	(85.1%)
5	Facilities	(76.0%)	Length of stay	(85.1%)

Table 5.32 TOP FIVE NON-PERFORMERS BY SECTORS

Ranking	Public		Private	
1	Revenue generation	(87.5%)	Surgery rate	(57.7%)
2	Profitability	(83.4%)	Operational cost	(46.2%)
3	Operational cost	(72.0%)	Profitability	(45.9%)
4	Occupancy rate	(50.0%)	Information system	(32.6%)
5	Productivity	(48.0%)	Productivity	(30.7%)

On the other hand, it is useful to explore the unfavourable aspects of critical factors. There are two reasons why the researcher believes this? First, aspects with high unfavourable indexes allows the respondents to see that improvements are in order and second lessons can be learned to bring back the level of service that is required by the patient, in other words, the management need to devise a service recovery strategy to upgrade the level of service. This concept has been explained in great detail in the service literature.

From table 5.29, critical factors in domain 5 (financial stability) are not performing very well. This is due to the high unfavourable index. This situation is the result of government policies on centralising all financial aspects of operations in the treasury division. The hospitals have no control over this factor, which is a matter more of political rather than organisational control. The management in public hospitals have only occupancy rate to manipulate to increase the level of service.

However, the private sector also has a problem with domain 5, that is operational cost, profitability and productivity (return on total assets). This situation is due to the nature of the competition in the healthcare industry. Profit margins/contribution margins are low due to absence of barriers of entry, since they can only saturate 20% of the market share. The private sectors need a more domain-

focused strategy to capture the market share over the long run. If the specific domain requirements are met, problems associated with the domain will automatically be solved.

Despite being vigilant about the high and low level of services, the researcher believes that the high indifferent index also has some significance. These indifferent responses, if properly studied, might lead to service improvements, as reasons emerge as to why indifferent was chosen. From the study, respondents selected indifferent because they have no power to change aspects of the services, a phenomenon which is frustrating to the respondents.

Again for the private sector, domain 5 seems to be a problem over which they have little control, while the public sector seems to have a problem with domain 2. All the symptoms attributed to this domain have been discussed in depth in the previous section.

Table 5.33 TOP FIVE INDIFFERENCE BY SECTORS

Ranking	Public		Private	
1	Complication rate after surgery	(66.7%)	Productivity	(38.5%)
2	Patient cost	(48.0%)	Operational cost	(34.6%)
3	Complication rate during surgery	(39.1%)	Occupancy rate	(33.3%)
4	Liquidity	(38.5%)	Patient cost	(33.3%)
5	Information systems	(29.6%)	Liquidity	(32.0%)

5.2.4 PERFORMANCE MEASUREMENT

We have discussed measurement domains, in terms of statistical analysis, importance and achievements, and high-low performance. This section will present the characteristics and nature of performance measurement used in the hospitals surveyed.

Table 5.34 ***PERFORMANCE MEASUREMENT PRACTICES BY SECTORS***

PM practices	Public freq	Public percent	Private freq	Private percent	Total freq	Total percent
Yes	52	94.5	20	69.0	72	85.7
No	2	3.6	8	27.6	10	11.9
Don't know	1	1.8	1	3.4	2	2.4
Total	**55**		**29**		**84**	

86% of the sample acknowledged the presence of performance measurement systems in the organisation, of which 72% are public hospitals and 28% are private. The public sector is more receptive towards a measurement system, since only 25% of the respondents either are not aware of the measurement system or reject the idea of measurement itself. For the private sector, this figure is 75%. The respondents were also asked about duration of PMS implemented in the organisation. Table 5.35 describes the practice in both sectors.

Table 5.35 ***YEARS OF PRACTISING PMS BY SECTORS***

PM Practices	Public Freq	Public percent	Private freq	Private percent	Total freq	Total percent
Less than 5 years	9	19.2	20	76.9	29	39.7
6 to 10 years	29	61.7	4	15.5	33	45.2
11 to 20 years	7	14.9	2	7.7	9	12.3
More than 20 years	2	4.3	0	-	2	2.7
Total	**47**		**26**		**73**	

62% of the public sector have implemented measurement systems for 6 to 10 years, while most of the private have practised them for less than 5 years (77%). A surprising finding is that two public hospitals have been measuring performance for

more than 20 years. In that case , why is it that public hospitals are not performing? Perhaps, as suggested by Neely et al (1999), they are measuring the wrong things.

In summary (refer to appendices) those who acknowledge PMS have large facilities, that is 25 – 50 beds (13%), 51 – 100 beds (28%), 101 – 200 beds (17%), 201 – 400 beds (13%) and more than 400 beds (31%). Those hospitals that practises PMS use a mixture of measures (86%) to reflect their operations, others use traditional measures (67%). 75% of the sample used a mixture of financial and non-financial measures, mostly a 60-40 mix of financial and non-financial measures. The survey reveals that all measurement is 75% successfully implemented across organisations. The respondents believe that public hospitals will be on a par with private hospitals in terms of providing effective services to the population. This has yet to be seen, as most programmes started only last year (2001).

Table 5.36 ***MEASUREMENT DOMAIN LEVEL OF IMPLEMENTATION***

	Level of Implementation (%) *					
Domains	**1**	**2**	**3**	**4**	**5**	**Mean**
Patient Care Experience	1.2	1.2	24.1	53.0	20.5	3.9
Effective Delivery of Care	1.2	3.6	28.9	41.0	25.3	3.9
Efficiency of Operations	1.2	2.4	32.5	47.0	16.9	3.8
Financial Stability	1.2	4.8	42.2	21.7	30.1	3.8
Capacity Utilisation	*1*.2	3.6	37.3	33.7	24.1	3.8

*1 : No implementation 2 : 25% implementation 3 : 50% implementation 4 : 75% implementation 5 : Full implementation

5.2.5 PERFORMANCE MEASURES

This section aims to explore performance measures or indicators used or commonly used in hospitals in Malaysia. The respondents were asked levels of emphasis, from 1= very low emphasis to 5 = very high emphasis on the following factors. These factors are arranged in order.

Table 5.37 *LEVEL OF EMPHASIS BY SECTORS*

Rank	Public	Private
1	Quality	Customer satisfaction
2	Customer satisfaction	Quality
3	Employees' productivity	Delivery performance
4	Delivery performance	Employees' productivity
5	Flexibility	Financial performance
6	Financial performance	Flexibility
7	Innovation	Innovation

Both sectors placed innovation at the bottom of the list. They believe the industry needs to be structured so that outcome can be measured in the future. The healthcare industry is not yet ready for innovation because it perceives problems in many other areas. The public sector is concerned with quality of services, followed by customer satisfaction. However, the private sector is very concerned with customer satisfaction, followed by quality of services. Patient satisfaction is the top priority for the private sector due to the fact that they are market-driven and satisfied customers will remain loyal customers. This can be seen from their patient care domain where all domains scored a high index.

5.2.6 MEASUREMENT MODELS

In this section respondents were asked, as hospital directors, which models they were familiar with or had heard about it. Table 5.38 tabulates the results.

Table 5.38 *MEASUREMENT MODELS BY SECTORS*

	Public		Private		Total	
Measurement model	freq	percent	freq	percent	freq	percent
Balance scorecard	26	36.1	4	13.8	30	29.7
Performance pyramid	6	8.3	3	10.3	9	8.9
Per criteria system	32	44.4	15	51.7	47	46.5
Integrated ref system	2	2.8	4	13.8	6	5.9
PMS Design process	1	1.4	2	6.9	3	3.0
Other models	5	6.9	1	3.4	6	5.9
Total	**72**		**29**		**101**	

47% of the respondents are familiar with performance criteria systems by Lynch and Cross, while the balance scorecard set by Kaplan and Norton is known to only 30%. The public sector ranks performance criteria (45%), then balanced scorecard (36%), as models that are familiar to them, whereas the private sector placed performance criteria systems (52%), balanced scorecard (14%), and integrated reference systems (13%) set by Bititci as models that they are familiar with. As previously discussed, performance measurement is still in its infancy in Malaysia. More research and projects need to be initiated in organisations in order to give a better understanding of measurement concepts.

5.2.7 MEASUREMENT INFRASTRUCTURE

Table 5.39 *REPORTING SCHEDULE BY SECTORS*

	Public		Private		Total	
Reporting Schedule	freq	percent	freq	percent	freq	percent
Daily	22	14.1	7	16.3	29	14.6
Weekly	21	13.5	3	7.0	24	12.1
Monthly	34	21.8	16	37.2	50	25.1
Quarterly	31	19.9	5	11.6	36	18.1
Bi-annually	14	9.0	2	4.7	16	8.0
Annually	34	21.8	8	18.6	42	21.1
Never measure	0	-	2	4.7	2	1.0
TOTAL	**156**		**43**		**199**	

Table 5.40 *PREFERRED REPORTING SCHEDULE*

Ranking	Public	Private
1	Monthly	Monthly
2	Annually	Annually
3	Quarterly	Daily

From table 5.40 shows that the public sector prefers monthly (22%), annual (22%) and quarterly (20%) reporting schedules. The private sector prefers them monthly (37%), annual (19%) and daily (16%). The private slightly differ from the public in terms of daily reporting because they believe an updated report keeps them up-to-date with the status of indicators so that they can have control over a given set of parameters.

The respondents were asked about indicators collected by their organisations. From table 5.41, it can be deduced that both sectors are conscious of controlling costs, especially the private sector (22%). The last in the list for public hospitals is quality of service; since they are overwhelmed by patient numbers, they make throughput their priority in order to service more in less time. This is probably the

reason that public hospitals in Malaysia suffer an image problem, as public confidence in physicians has deteriorated over the years.

Table 5.41 TOP FIVE INDICATORS COLLECTED BY SECTORS

Ranking	Public	Private
1	Cost	Cost
2	Utilisation rate	Customer satisfaction
3	Volume of service	Volume of service
4	Customer satisfaction	Quality of service
5	Quality of service	Utilisation rate

Last year, the Ministry launched a number of programmes to boost public confidence in public hospitals as patient-centred hospitals. A lot of hospitals are built with this theme in mind, to foster friendly interaction in patient-doctor relationships.

That the private sector placed customer satisfaction second on the list reflects that even though they are constrained by cost patient satisfaction is crucial to the operation of the hospitals. This is important so that the patient will come back for follow-up treatment at the same facility. The private hospitals are in great competition with each other, especially those close to each other. They have to position themselves as a hospitality industry in order to serve the patient better. In Malaysia, private healthcare is not allowed to promote its products and services through commercial media, as the government believes it would confuse the general public because of the "overcrowding effects" of advertisement. Therefore, services are the only dimension used to differentiate an organisation from its competitors. These phenomena are explained in much of the marketing and service literature (Kotler 1998 and Lovelock 1996). Meanwhile, utilisation rate ranks last since the private sector focuses on volume and quality of service to the patient, as they believe

that if these are carried out successfully, utilisation rate, service provision and productivity will follow.

Table 5.42 ***INDICATORS COLLECTED BY SECTORS***

Indicators	Public freq	Public percent	Private freq	Private percent	Total freq	Total percent
Cost	45	20.5	25	21.6	70	20.8
Quality of Service	32	14.4	17	14.7	49	14.6
Utilisation rate	41	18.6	17	14.7	58	17.3
Customer satisfaction	34	15.5	25	21.6	59	17.6
Service provision	14	6.4	5	4.2	19	5.7
Productivity	18	8.2	7	6.0	25	7.4
Volume of service	36	16.4	19	16.4	55	16.4
Others	0	-	1	0.8	1	0.3
TOTAL	**220**		**116**		**336**	

Table 5.43 ***RESPONSIBILITY CENTRES BY SECTORS***

Reporting Schedule	Public freq	Public percent	Private freq	Private percent	Total freq	Total percent
Department	44	41.9	17	36.2	61	40.1
Position	21	20.0	16	34.0	37	24.3
Committee	33	31.4	13	27.7	46	30.3
Others	7	6.7	1	2.1	8	5.3
TOTAL	105		47		152	

In terms of giving the responsibility to measure, both sectors share the same view, that each department should have the responsibility to ensure performance measurement systems are in place across the organisation; 42% of public hospitals and 36% of private take this view. Moreover, the private sector believes that giving individuals responsibility (34%) is more effective than relying on a committee (28%), in the aim of getting the job done with persons accountable for the results; this is known as process owner (researcher interviews), and is supported by most

performance measurement literature. The public sector, on the other hand, holds that committees (32%) should be given more responsibility to ensure measuring activities, followed by individuals (20%). As a result of this, the public sector has many committees formed across and within functions to tackle organisational problems. These are task-oriented committees that help management to solve issues emerging in the organisation, which are phased out once the task is completed. Which system is better is still inconclusive, and both seem an efficient and effective method of dealing with situations that arise.

Table 5.44 INDICATORS COLLECTED BY SECTOR AND CENTRES

Structure	Ranking	Public Indicators	Private Indicators
Department	1	Utilisation rate	Cost
	2	Cost	Utilisation rate
	3	Volume of service	Customer satisfaction
Position	1	Customer satisfaction	Cost
	2	Quality of service	Customer satisfaction
	3	Cost	Volume of service
Committee	1	Utilisation rate	Cost
	2	Cost	Customer satisfaction
	3	Volume of service	Utilisation rate

In giving responsibility to different modes of management, different indicators are collected for the purpose. The private sector is consistent in terms of their cost containment strategy. In order to survive, they have to work within a cost constraint. This is true for all situations for the private sector. The differentiated aspects of management are based on customer satisfaction, utilisation rate and volume of service. These differentiated aspects of private hospitals are stressed in Camilleri and O'Callaghan (1998) as augmented ('hotel') service products.

From the tabulation above, private sectors are consistent in reporting standards. A monthly basis for reports is the most popular approach, but some prefer annual, daily and bi-annual reports. The public sector prefers reports to be monthly and annually, depending on the indicators they wish to communicate.

Table 5.45 ***INDICATORS COLLECTED BASED ON REPORTING SCHEDULE BY SECTORS***

	Public		
Factor/Rank	1	2	3
Cost	Monthly	Annually	Quarterly
Quality of service	Monthly	Annually	Quarterly
Utilisation rate	Monthly	Annually	Quarterly
Customer satisfaction	Annually	Monthly	Quarterly
Service provision	Annually	Monthly	Quarterly
Productivity	Annually	Monthly	Quarterly
Volume of service	Annually	Monthly	Quarterly
	Private		
Factors/Rank	1	2	3
Cost	Monthly	Bi-Annually	Daily
Quality of service	Monthly	Annually	Daily
Utilisation rate	Monthly	Daily	Annually
Customer satisfaction	Monthly	Annually	Daily
Service provision	Monthly	Daily	Annually
Productivity	Monthly	Annually	Daily
Volume of service	Monthly	Daily	Annually

Table 5.46 ***COLLECTION METHODS BY SECTORS***

	Reporting Schedule *					
Collection Methods	**1**	**2**	**3**	**4**	**5**	**Mean**
Charts	1	4	11	16	29	4.1
Newsletter	2	7	32	11	6	3.3
Personalised report	2	11	24	34	71	4.3
Meeting with managers	0	1	4	20	51	4.7
Computer-generated report	2	4	10	20	34	4.1
Find information yourself	21	5	11	16	15	2.9
Others	2	4	7	3	1	3.5

***1 : Highly ineffective 2 : Ineffective 3 : Neutral 4 :Effective 5 :Highly effective**

The respondents were initially asked about the media by which they receive their performance information. This was done to gauge the effectiveness of each medium in giving performance information. Then, they were asked to rate the effectiveness of the media in question 26, from a scale of 1 to 5, where 1= highly ineffective to 5 =highly effective. The results are summarised in table 5.46.

Table 5.47 PERFORMANCE REPORTING MEDIA

	Public	Private	Total	Average
Charts	21	5	26	1.4
Newsletter	18	10	28	1.6
Personalised report	25	18	43	2.4
Meeting with managers	60	20	80	4.4
Computer-generated report	46	15	61	3.4
Find information yourself	21	15	36	2.0
E-mail	27	10	37	2.1
Notes/memo	10	10	20	1.1
Others	5	1	6	0.3
Total (Total=18)	233	104	336	

The public sector used a wide range of reporting methods to convey performance information and the most popular method used is meeting with managers. This is also true for the private sector. The least preferred methods for the public sectors are notes/memo (4.3%), newsletter (7.7%) and charts (9%), while private sector's least preferred are charts (4.8%), newsletter (9.6%) and notes/memo (9.6%). The following table ranks them in order.

Table 5.48 ***PERFORMANCE REPORTING METHOD BY RANKING***

Most Preferred

Ranking	Public	Private
1	Meeting with managers	Meeting with managers
2	Computer-generated	Personalised report
3	E-mail	Find information
4	Personalised report	Computer-generated

Least Preferred

Ranking	Public	Private
1	Other methods	Other method
2	Notes/memo	Charts
3	Newsletter	Newsletter
4	Charts	Notes/memo

Both sectors report meeting with managers as top of the list. Face-to-face interaction is the best form of communication, as performance review will have immediate feedback. Generally both sectors centre around similar aspects of data collection. Private hospital administrators prefer personalised reports with detailed explanation. Public hospital administrators, on the other hand, prefer computer-generated reports which have been processed by the electronic data processing (EDP) department. At a glance, they can see if performance targets have been met. All of this depends on individual management style.

The survey also examines the differences between perceived importance and emphasis on a range of performance factors between public and private. By comparing this information, the researcher will be able to identify possible gaps that exist where performance measures are over- or under-emphasised. The respondents were asked to rate the importance and emphasis of factors that relate to the domain in their organisations. Responses were on a scale of 1 to 5, where 1 = least

important/very low emphasis and 5 = very important/very high emphasis. The results of the factors under scrutiny are shown in table 5.49.

Table 5.49 ***PERFORMANCE GAPS BETWEEN SECTORS***

	Importance		**Emphasis**		**Gap**	
	public	private	public	private	public	private
Quality	4.7	4.8	4.6	4.7	+0.1	+0.1
Customer satisfaction	4.7	4.7	4.6	4.8	+0.1	-0.1
Financial performance	2.8	4.1	3.2	4.2	- 0.4	-0.1
Employees productivity	3.5	4.0	4.1	4.3	- 0.6	-0.3
Delivery performance	4.2	4.4	4.1	4.4	+0.1	0.0
Flexibility	3.3	3.9	3.8	4.1	- 0.5	-0.2
Innovation	3.3	3.9	3.0	3.7	+0.3	+0.2

Table 5.49 shows that factors rated most important by respondents in the public sector are quality, customer satisfaction and delivery performance, while most emphasis is on quality, customer satisfaction, delivery performance and employees' productivity. For the private sectors the most important factors rated are quality, customer satisfaction and delivery performance, while most emphasis on customer satisfaction, quality and delivery performance. Both sectors share broadly similar views.

The largest 'negative gap' is perceived as over-emphasis and the largest 'positive gap' is perceived as under-emphasis. In the public sector, the largest positive gap is *innovation* and the largest negative gap is *employees ' productivity.* In the private sector, the largest positive gap is *innovation* and the largest negative gap is *employees ' productivity.* Both sectors experience the same phenomena because the industry is progressing at a slow pace. Therefore, both sectors share similar characteristics, that is nature of the healthcare industry. The Director-General

of Health points out that the healthcare industry is in its infancy, and there are so many aspects of healthcare services that need to be addressed.

Table 5.50 FUNDING MECHANISMS

Rank	Government	Investors	Earnings
1	Meeting with managers	Computer-generated	Meeting with managers
2	Computer-generated	Personalised report	Personalised report
3	Electronic mail	Meeting with managers	Computer-generated

In terms of funding, the public sector (government), still uses traditional methods of data gathering, that is, meeting with its managers to review performance; in second place computer-generated report is preferred over electronic mail due to the fact that computer-generated report provides a richer picture of performance than electronic mail.

However, investors that provide funds for hospital prefer computer-generated reports since it is time-consuming for busy people to meet and review performance with managers and read reports from process owners. Meanwhile, the private sector is keen on looking at details, preferring meeting with managers as their first choice, followed by personalised report and computer-generated report. The private sector is careful in making decisions as the burden lies with the individual holding the post. This is the reason why the private sector is fed with information on a daily basis, to ensure that the managers make correct and informed decisions.

The respondents were asked the reason why PMS was set up in their respective organisations. The following responses are tabulated in order of importance.

Table 5.51 ***REASON FOR INTRODUCTION BY SECTORS***

Rank	Public	Private
1	Management review board (36%)	Internal management proposal (39%)
2	Internal management proposal (34%)	Management review board (28%)
3	External audit committee (12%)	Shareholders (12%)

PMS is set in different ways in public and private sectors. The management review board is responsible for setting up a sytem in a public organisations. The Ministry of Health in Kuala Lumpur along with other consultants and senior medical directors make up the review board. These very senior executives believe that a system of performance measurement will assist hospital directors to manage their organisations effectively and efficiently. Moreover, the directors themselves agree (34%) that proper implementation of the system will help coordinate activities within the organisations. In the private sector, on the other hand, the initiatives are the result of internal management proposals. The Chief Executive Officers believe that the system will work for them, and the board of directors (28%) agrees with management views.

5.2.8 MEASUREMENT CHARACTERISTICS

This section is intended to explore the nature of performance measurement in Malaysia, covering areas of barriers of implementation, facilitators and inhibitors of measurement, competitive structure and other critical areas. In terms of barriers for PMS respondents were asked to identify them. The following are the results.

Table 5.52 ***PMS BARRIERS BY SECTORS***

Reasons	Public freq	Public percent	Private freq	Private percent	Total freq	Total percent
Time to explore data	29	53.7	4	13.8	33	39.8
Shortage of specialist staff	36	66.7	10	34.5	46	55.4
Access to data	8	14.8	6	20.7	14	16.9
Poor styles of presentation	8	14.8	2	6.9	10	12.1
Interpretation	24	44.4	6	20.7	30	36.1
Confidence	1	1.9	3	10.3	4	4.8
Others	0	-	3	10.3	3	3.6
TOTAL	**54**		**29**		**83**	

Table 5.53 ***RANKING BY SECTORS***

Ranking	Public	Private
1	Shortage of specialist staff	Shortage of specialist staff
2	Time to explore data	Interpretation
3	Interpretation	Access to data
4	Access to data	Time to explore data
5	Poor style of presentation	Confidence

Barriers for measurement systems in an organisation differs between public and private sectors. Both sectors public (67%) and private (35%) agree that shortage of specialist staff is detrimental to the implementation of PM systems. Without the right staff, other problems (secondary in nature) crop up, since the data obtained need to be manipulated so that accuracy of information is assured. Other areas of concern for the public sector are time to explore (54%), interpretation of data (45%) and access to data (15%). The private sector views interpretation of data as second in importance (21%), with access to data (21%) and time to explore (14%) also parts of the barriers.

Respondents were asked the reasons for setting up performance measurement systems in the organisation. In general, the majority of respondents agree that proper implementation of PMS can assist management to identify problem areas (15%), and

also believe that PMS promotes planning activities within the organisation (14%) and gives clarity of focus by setting targets for employees to achieve (12%).

Table 5.54 ***REASONS FOR IMPLEMENTING PMS BY SECTORS***

Reasons	Public freq	Public percent	Private freq	Private percent	Total freq	Total percent
Identify problem area for mgmt	55	15.2	23	14.6	78	15.0
Service quality issues (improvement)	36	10.0	20	12.7	56	10.8
Reallocating work	14	3.9	5	3.2	19	3.7
Reallocating resources between services	17	4.7	5	3.2	22	4.2
Level of service provision	20	5.5	11	7.0	31	6.0
Input to support bid	27	7.5	3	1.9	70	13.5
Budget planning	33	9.1	14	8.9	30	5.8
Planning	50	13.9	20	12.7	47	9.1
Manpower planning	33	9.1	13	8.2	46	8.9
Cost control	25	6.9	29	18.4	54	10.4
Target setting	50	13.9	14	8.9	64	12.3
Others	1	0.3	1	0.6	2	0.4
TOTAL		**361**		**158**		**519**

The public and private sectors share similar views in initiating PMS activities within the scope of their duties. The following are the reasons in order:

Table 5.55 ***TOP FIVE REASONS FOR PMS BY SECTORS***

Ranking	Public	Private
1	Identify problem area	Cost control
2	Planning	Identify problem area
3	Target setting	Service quality issues
4	Budget planning	Planning
5	Manpower planning	Target setting

Since the healthcare industry in Malaysia is very competitive, cost is always an issue in the private sector to ensure that their budget will not overrun, and controlling cost is the primary factor that influences the decision of top management to implement PMS. The private sector believes that PMS will help them look into

the organisation's problems and at the same time resolve issues regarding service quality. The public sector believes that PMS helps them to identify problematic areas, and also helps in planning, especially in budget and manpower, and assists them in their target setting.

The respondents were also asked how satisfied are they with PMS used in the organisations, using a scale of 1 = least satisfied to 5 = very satisfied. The following are the results tabulated in order.

Table 5.56 ***TOP FIVE SATISFACTION FACTORS BY SECTORS***

Rank	Factors	Mean	
1	Setting standards	3.4	public
2	Improving quality of outputs	3.3	
3	Providing basis for calculating rewards	3.3	
4	Justifying resources	3.3	
5	Improving quality of inputs	3.1	
1	Setting standards	3.9	private
2	Raising staff & mgmt consciousness about efficiency & effectiveness	3.9	
3	Determined value for money	3.8	
4	Indicating areas of potential cost savings	3.7	
5	Justifying resources	3.6	

Table 5.56 shows that the private sector has higher means than the public sector. The private sector is more satisfied in using measurement systems than the public. Both sectors agree that PMS allows them to set their standards based on their organisational capabilities. The performance prism produced by Neely and Bourne (2001) reinforces this point. The private sector believes that staff (top floor and shop floor) communication is important to raise the consciousness of the organisation, by making a deliberate effort to introduced PMS across the organisations; as Lockamy (1997) puts it, "communication is the linkage for measurement". This helps in

sharing organisational values and thus creates synergy among employees to concentrate on achieving their mission and the organisational objectives of the organisation by sharing common goals.

Table 5.57 *LEVEL OF SATISFACTION BY SECTORS*

Factors	Mean Private	Public
Clarifying organisational objectives	3.5	2.7
Monitoring & controlling progress against plan	3.6	2.8
Justifying use of resources	3.6	3.3
Providing basis for calculating reward & incentives	3.5	3.3
Setting standards	3.9	3.4
Indicating areas of potential cost savings	3.7	2.9
Improving quality of inputs	3.6	3.1
Improving quality of outputs	3.6	3.3
Determining value for money is being obtained	3.8	2.8
Raising staff & mgmt consciousness about efficiency	3.9	3.2

** 1- Definitely not satisfied 2- Not satisfied 3- Indifferent 4- Satisfied 5- Definitely satisfied*

The respondents were asked about aspects that facilitate and inhibit the development of an effective measurement system. The following table ranks aspects of PMS.

Table 5.58 *FACTORS THAT FACILITATES & INHIBIT DEVELOPMENT OF PMS*

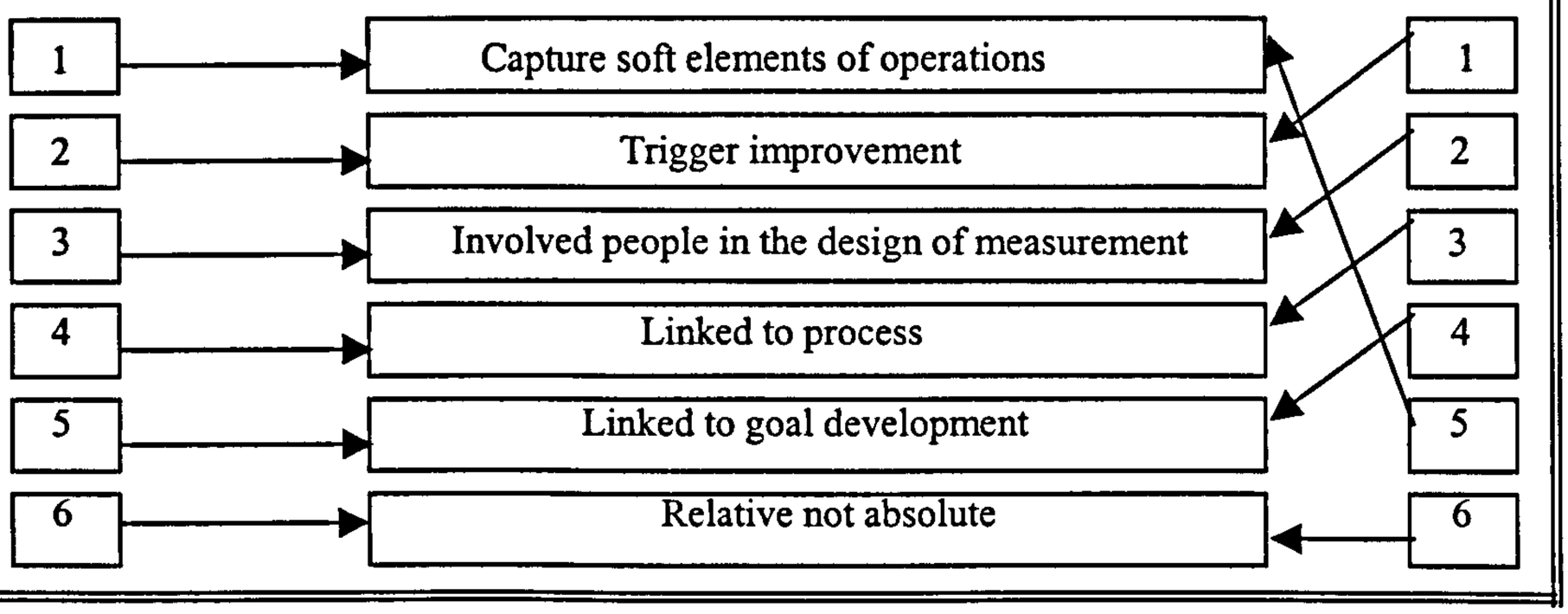
	Public		Private		Total	
Factorsthat facilitates	**freq**	**percent**	**freq**	**percent**	**freq**	**percent**
Identify vital few measures	15	10.2	10	16.7	25	12.1
Top management commitment	55	37.4	20	33.3	75	36.2
Involved people in measurement	27	18.4	14	23.3	41	19.8
Stakeholder pressure	10	6.8	4	6.7	14	6.8
Have a system of measurement	38	25.9	12	20.0	50	24.2
Others	2	1.4	0	-	2	1.0
TOTAL	**147**		**60**		**207**	
Factors thatInhibit	**freq**	**percent**	**freq**	**percent**	**freq**	**percent**
Blame culture	17	13.3	7	13.5	24	13.3
Lack of process understanding	42	32.8	12	23.1	54	30.0
No feedback of performance	22	17.2	18	34.6	40	22.2
Measures too complex	10	7.8	4	7.7	14	7.8
Inherited system (inertia)	35	27.3	10	19.2	45	25.0
Others	2	1.6	1	1.9	3	1.7
TOTAL	**128**		**52**		**180**	

Table 5.59 TOP THREE FACTORS THAT FACILITATES & INHIBIT PMS

Rank	Public	Private
1	Top management commitment	Top management commitment
2	Have a systems of measurement	Involved people in measurement
3	Involved people in measurement	Have a systems of measurement
1	Lack of process understanding	No feedback of performance
2	Inherited systems (Inertia)	Lack of process understanding
3	No feedback of performance	Inherited systems (inertia)

The private sector believes that feedback of performance is very important in order to make management aware of the strategy aligned to the objectives, due to the fact that they are not very satisfied with monitoring and controlling progress against plan. The private sector is keen on getting immediate feedback so that corrective action can be taken immediately. Given a list of characteristics of PMS, the respondents were asked what a measurement system would have to do in order to be successful. The public sector believes that lack of understanding of processes undermines their implementation of PMS. They believe that if processes are not well understood then the system will remain static, as specialists are not skilled in generating information to feed back to the decision maker. The following illustrates the ranking.

Table 5.60 *ASPECTS OF A GOOD MEASUREMENT SYSTEM*



The private sector believes that measurement must trigger improvement or else there is no value for money. The public sector, on the other hand, emphasises that measurement should capture 'soft elements' of the operations, for example employee satisfaction. Since they are not profit motivated, they are more concerned with servicing the population.

Table 5.61 INTENTION TO USED PMS BY SECTORS

	Public		Private		Total	
Factors	**freq**	**percent**	**freq**	**percent**	**freq**	**percent**
Yes	33	63.5	14	48.3	47	58.0
No	3	5.8	5	17.2	8	9.9
Don't know	16	30.8	10	34.5	26	32.1
TOTAL	**52**		**29**			**81**

The respondents were asked about their intention of introducing measurement systems into their organisational settings. 58% of the respondents gave positive feedback, of which 70% were from the public sector and 30% from private sector. 32% were not sure, in which 62% were public and 38% private. 10% of the response are far from convinced that a measurement system will assist in their capacity as administrators, of which 38% are public and 62% are private. It is surprising that the private sector is more sceptical about performance measurement systems since its recent introduction to the Malaysian healthcare industry.

Table 5.62 SECTORS' COMPETITIVENESS ACCORDING TO DOMAINS

Domains	**Public**	**Private**
Patient care experience	5.6	5.5
Effective delivery of care	5.3	5.4
Efficiency of operations	5.4	5.4
Financial stability	4.8	5.3
Capacity utilisation	5.0	4.7

The respondents were asked to compare their organisations with competitors on the measurement domains, from scale of 1= worst off to 7 = better off. In overall performance, the healthcare industry in Malaysia is not so better off (mean of 5.3) for both sectors. Both are looking for better ways to manage the organisation so that better control of all aspects of the business can be accomplished. This is a positive thing for the industry as all healthcare organisations are in a learning mode to incorporate management techniques to improve their performance. Moreover, the researcher's personal interviews with the hospital directors all give positive feedback regarding PMS.

Table 5.63 *ASPECTS OF COMPETITIVENESS BY SECTORS*

Aspect	Public	Private
Services	3.8	3.9
Technology	3.0	3.4
Treatment	3.6	4.0
Quality	3.7	3.9

The respondents were also asked about aspects of competition. Both sectors put technology at the bottom of the list. The capital investment for technology is high. Cost is a factor to consider when investing in high technology-based facilities. These is the reason why the Malaysian government it its 1998 annual report imposed a zoning of medical equipment to give equity to the population. All purchases of technology (investment of more than RM 1million) have to get clearance from the Ministry of Health. See Chapter 3 for further details. The private sectors outperformed the public sector in all areas: services, treatment and quality. Patients in the private sector are more demanding since they pay their medical bills. As a

results of this, the private sector has to be more competitive to meet the demand of patients as well as facing stiff competition from other facilities.

Technology was rated low by both sectors (approximately 16% of the respondents). District hospitals are not well equipped with modern sophisticated technology, as mentioned in the previous chapter. These are hospitals with no specialists, only general practitioners and triage nurses. In terms of services, treatment and quality the private sector outperformed the public, while the public performs only marginally well.

Table 5.64 ***COMPARISON OF COMPETITIVE SECTORS (%)***

Private			Public	
Unfav	**Fav**	**Factors**	**Fav**	**Unfav**
-	69.2	Services	58.2	-
15.3	46.2	Technology	21.8	16.4
3.8	73.1	Treatment	49.0	1.8
3.8	69.2	Quality	52.7	1.8

68% of the respondents are partially supportive of performance measurement systems as a means of accomplishing organisational goals, of which 76% are public and 24% are private sector. However, 28% of the private sector express their contentment with PMS as completely supportive of organisational goals, while 22% of the public sector believe this. 24% of the private sector are sceptical of PMS: 17% responded that it is unrelated to success and 7% that it is completely unsupportive. These 24% negative respondents use financial performance measures as a system in their organisations. 75% of the public sector respondents that partially support PMS do implement the systems within their organisation, and 25% fully support PMS.

55% of private sector respondents that partially support PMS do implement the systems within the organisations, and 40% fully support the systems. However, 5% that implement the systems are not fully satisfied with the systems. Given that the level of support for measurement systems is still low (24%), the likelihood of PMS gaining recognition in the Malaysian industry is bleak. Not until PMS is fully accepted into the mainstream will Malaysian healthcare see positive results from it.

Table 5.65 PMS SUPPORTIVENESS BY SECTORS

	Public		Private		Total	
Factors	**freq**	**percent**	**freq**	**percent**	**freq**	**percent**
Completely supportive	12	21.8	8	27.5	20	23.8
Partially supportive	43	78.2	14	48.4	57	67.9
Completely unsupportive	0	-	2	6.9	2	2.4
Unrelated	0	-	5	17.2	5	6.0
TOTAL	55		29		84	

In the last section of the survey, the respondents were asked about weaknesses and strengths of the hospital. Table 5.66 shows responses to the above question.

Table 5.66 HOSPITAL STRENGTHS AND WEAKNESSES

STRENGTHS

MEASUREMENT **35.5%**
- deals with performance indicators, top management commitment, and flexibility

MOTIVATION **45.2%**
- deals with empowerment, top management commitment, teamwork

PLANNING **9.7%**
- deals with manpower and budget, set targets

COST CONTROL **9.7%**
- record keeping, conservative, feedback

WEAKNESSES

MEASUREMENT **43.1%**
- vague, subjective, inaccurate, timing, feedback

MANPOWER **16.5%**
- lack of specialist, no skills, top management

MOTIVATION **12.7%**
- attitudes, lack of motivation, bias

COMPUTERISATION **3.8%**
- lack of computer, implement system

LEADERSHIP **6.3%**
- top management commitment, funding

from HQ, Ministry interest

CONTROL **15.2%**
- resource allocation, misuse of service, no feedback

COMPETITOR **2.5%**
- close proximity,

Since the respondents were the experts in the industry, with vast experience in healthcare, the researcher then put to them the question, "What do you think are the characteristics that ***HOSPITALS OF THE FUTURE*** should have in order to compete in terms of better managed care for the Malaysian population?" The responses were collated and categorised as follows:

Table 5.67 ATTRIBUTES OF FUTURE HOSPITALS

1. Excellence in service	31.0 %
2. Patient-centred hospital	20.0
3. Integrated system	19.3
4. Medical technology	11.6
5. Community medicine	8.5
6. Wage & compensation management	6.2
7. Computerisation	4.7

The responses reveal that in the opinion of the directors, hospitals of the future must attain excellence in service. 31% of the respondents share the view. This service attribute includes providing a full range of services, serving as a one-stop centre for patients, zero complaints, better facilities with large operating theatres etc. The respondents also promote patient-centred hospitals with specialists highly trained in their respective fields, demonstrating professionalism and able to help those in need of treatment, poor or rich. It can be seen that the attributes listed in table 5.67 are components of healthcare in developed countries such as the United

States, United Kingdom and other European countries. In order to achieve this objective of being hospitals of the future, Malaysian hospitals have no choice but to evolve.

5.3 SUMMARY

Chapter Five discuss further the analysis of the data collected, for two purposes. The first is to provide the basis for selection for the case studies in Chapter Six using the critical success factors approach (CSF). The second is to provide a contextual background for the case studies by assessing the level of involvement from both sectors in the measurement of performance.

This chapter provides answers to some of the questions posed at the beginning of the research. It might be assumed that measuring more makes an organization look better, so that it scores higher in the survey. However, it might not be better at all because it did not incorporate measurement as a system to complement the organisation's overall structure. That is why more in-depth analysis is needed of the effectiveness of performance measurement systems and this will be done by explicating the framework via case study analysis.

CHAPTER 6
DATA ANALYSIS FOR CASE STUDIES

6.1 INTRODUCTION

The previous chapter considered a survey which analysed performance measurements. It sought to answer the 'what' and 'how' of the organisations' collection of information in an effort to implement a performance measurement system. This chapter aims to gain an understanding of the nature of measurement systems in the context of healthcare services for both public and private sectors. It seeks to explore 'why' performance is measured in such a way. A case study approach was chosen for the purpose of the exploration as suggested by Eisendhart (1989), since it can capture the reality in greater detail. Moreover, Yin (1989) reiterates, "the case study method allows the researcher to investigate a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used." Many researchers advocate studying performance measurement using a case study approach (Kaplan 1984 and Brignall 1993). Case study methodology has been further developed, among others, Fitzgerald et al (1992), Crawford (1988), Lockamy (1991) and Geanuracos and Meiklejohn (1994). It this study multiple cases were used to "strengthen the results by replicating pattern matching, thus increasing confidence in the robustness of the theory." (Amaratunga et al 2001).

To maintain objectivity, rather than using the researcher's discretion and judgements, criteria employing critical success factors (CSF) were used to select four hospitals out of a total of 180 responding to the survey. These four organisations were selected based on the matrix outlined in Chapter Four (low/high performance and public/private sector). A matrix was created to categorise organisations according to critical success factors. These have been outlined in the performance measurement literature. Critical success factors can be defined as a limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for an organisation (Rockart 1979). These are factors that have the highest impact on the organisation. The details of CSF have been explained in Chapter Two of this thesis. There are twenty-eight CSFs in the instrument, consisting of five domains which have been well researched in the healthcare literature.

Most of the interviewees are physicians in their organisations, who play a dual role, as both administrators and doctors. This means that they had limited time for interviews. Consequently, the researcher collated structured questionnaires that detail performance measurement practices in the organisation. These were given to the hospital directors to be filled out at his/her convenience. The researcher collected the questionnaires a few days after the interviews. The interviews were structured and involved hospital directors and heads of departments. The details of the procedures have been explained at greater length in Chapter Four. With the permission of the directors, the researcher then collected archival data, documents, evidence etc, as well as interviewing key personnel in their respective departments. This will be explained further in the next section.

For facilitation purposes, the researcher developed a case protocol as suggested by Eisendhart (1989). This protocol is consistent throughout the cases so inferences could be made 'within' and 'across' cases. Yin (1989) also indicated that protocol is a major tactic in increasing the reliability of case study research and is intended to guide the researcher in conducting case studies. These include interview questions, procedures and general rules. This protocol aims to study the nature of performance measurements. Moreover Yin (1994) advocates a test to be used in the research phase to check for validity and reliability in the case study methodology. The following table is generated:

TABLE 6.1 CASE VALIDITY & RELIABILITY TEST

Tests	case study tactic	phase in the research
Construct Validity	use of multiple sources of evidence	data collection
	establish chain of evidence	data collection
	Have key informant review draft reports	writing up cases
Internal Validity	do pattern matching	data analysis
	do explanation building	data analysis
External validity	use replication logic in multiple case studies	research design
Reliability	use case study protocol	data collection
	Develop case study database	data collection

Adapted from: Yin, R(1984), Case Study Research: Design andMethods, Thousands Oaks: Sage

From the interviews conducted, performance measurement, as a topic, is not universally understood in many Malaysian organisations. However, in mapping activities pertaining to performance measurement, the researcher examined the structure of organisations that promote measurement activities, one of which was quality improvement. These activities lead to improved performance. As discussed in the literature, performance measurement is a new emerging concept in Malaysian

industry. As can be seen throughout the case, quality assurance projects and committees are widely used in the Malaysian context, and are viewed as acceptable by many Malaysian practitioners.

The challenge in data analysis for qualitative enquiry is, "to make sense of a massive amount of data, reduce the volume of information, identify significant patterns and construct a framework for communicating the essence of what the data reveals" (Patton 1990). In analysing the case, the researcher employed the "Donabedian model" to investigate the healthcare industry. This is the "Structure-Process-Outcome" model. It applies to all 'within' cases so that better understanding can be accomplished throughout the cases. Structure basically means a formal and informal way of exerting influence by mechanisms that are featured in the organisation (Donabedian 1996). Processes are more complex and steps are taken to achieve an acceptable output. Outcomes, on the other hands, are an attribute of the final output, ie organisational achievements and results. This is illustrated as follows:

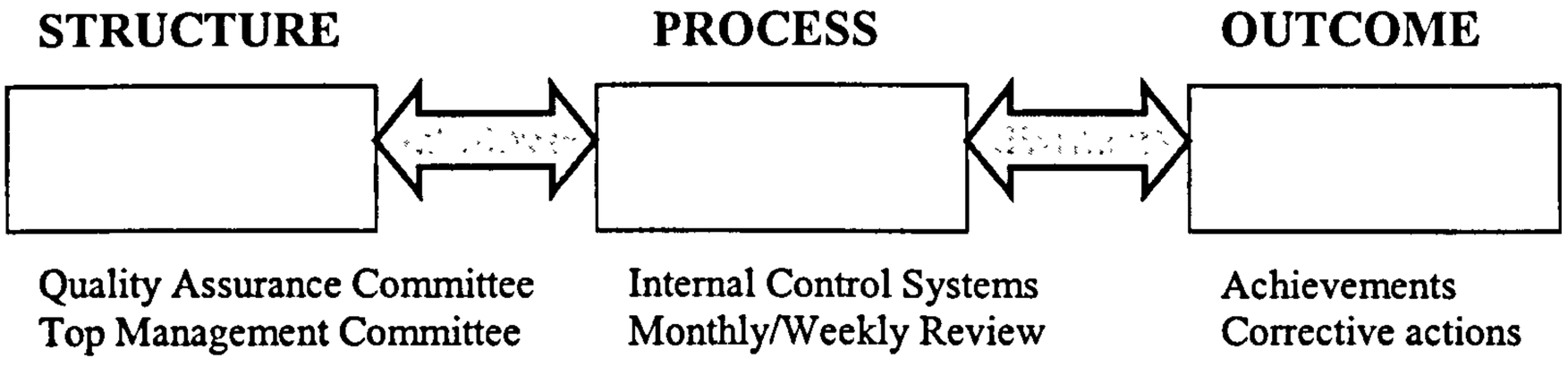


FIGURE 6.1 SCHEMATIC VIEW OF DONABEDIAN MODEL

6.2 WITHIN-CASE ANALYSIS

The purpose of within-case analysis is to understand 'what is happening' in the organisation in the context of performance measurement systems. Kuo, Dun and

Randhawa (1999) describe as it "becoming intimately familiar with each case individually and documenting it thoroughly". In doing this, three major steps adopted from Patton (1990) were used in this study:

1. assemble and organise raw case data including interview transcript, documentation, archival records and other evidence from the hospitals.
2. Edit data, summarise and organise case information topically for ready access.
3. Build data displays for each individual case.

The following sections are within-case analysis, as a result of fieldwork done in Malaysia, which emerged from the critical factors that have been discussed in depth in Chapter Four. This section is intended to explore performance measurement systems within an organisation. In doing so, the researcher segmented it into three distinct components: namely strategy formulation and deployment, internal control systems, and managing process. These components are replicated from the Donabedian formulation, discussed in the literature, STRUCTURE-PROCESS-OUTCOME. The strategy formulation and deployment phase can be seen at the organisational level. The internal control systems phase is at departmental level, also known as process level and managing processes phase at the operational level of the organisation.

6.2.1. HOSPITAL A

6.2.1.1 BACKGROUND INFORMATION

Hospital A was established in 1904 as a small district hospital. In the 1960s the hospital was further developed into 3 phases of physical infrastructure. The first phase is a basic building made of wood, the second phase is the turning point in which the wood building was replaced by a concrete structure and the third phase is upgrading of the entire infrastructure into a General Hospital. To date the hospital has almost 700 beds capacity with 1,200 experienced staff. Hospital A is believed to have been pioneered by the British before World War II. Figure 6.2 in Appendix 9 shows the recent organisational chart of Hospital A.

Hospital A is the first hospital in Malaysia to be accredited under Malaysian Society for Quality in Healthcare (MSQH). This is a new quality award recently introduced in Malaysia to recognise achievement in the healthcare industry. Since its introduction, only four hospitals have been accredited so far. Hospital A is now a benchmark for other public as well as private sector hospitals in the country. Moreover, in 1999 Hospital A won the Prime Minister's Award in the public sector category. During the time of this case study, Hospital A was busy with quality audit for its third stage on quality movement, that is MS ISO 9002. This supports the organisation's commitment towards continuous improvement making quality their enabler for organisational effectiveness.

6.2.1.2. STRATEGY FORMULATION AND DEPLOYMENT

Hospital A was selected for the case study based on its CSF, which is at position in quadrant 1 (public hospital with **High** performance). In this section the researcher will focus on understanding the nature of the organisational activities that distinguished the organisation from the rest of the respondents. All archival data collected are in Bahasa Melayu, a national language of Malaysia, therefore, the researcher is only able to give the meaning in the closest translation. This rule applies throughout the thesis. In order to be consistent, the researcher will define the terms vision, mission and strategy that will be used throughout the thesis. Bedrup (1995) defines vision as, "what the company is aiming at in the future. It serves as the long-term roadmap for the company." Bounds et al (1994) define vision as, " [a] statement [that] outlines what purposes managers want the organisation to serve over the long term and what the organisation should become."

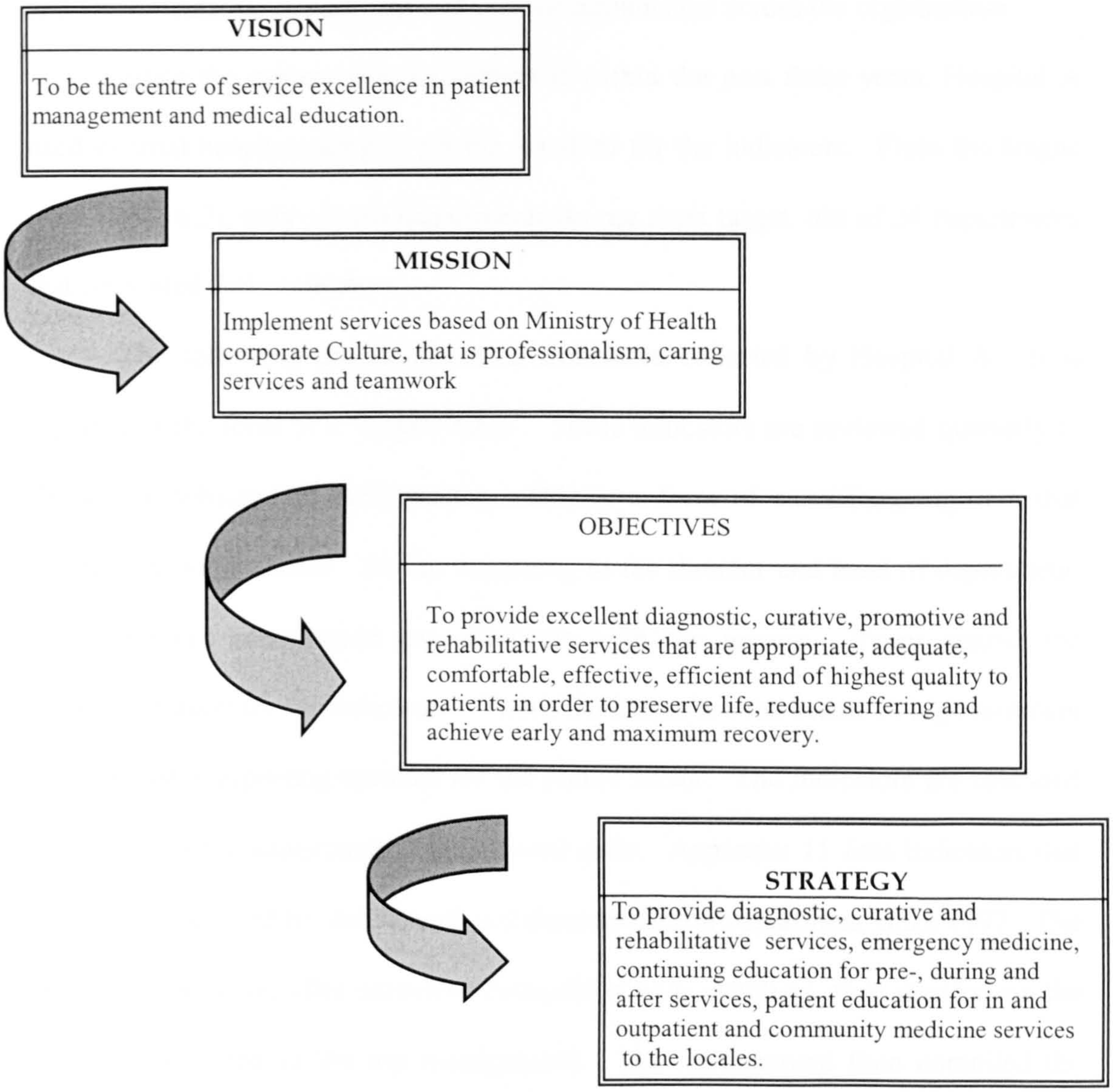
Bedrup (1995) defines mission as, "the scope of business activities the company pursues.....A mission answers the question: 'What business should the company be in?' ". While Bounds et al (1994) describe mission as, " [an] organisation's current purpose in terms of what the organisation will do over the near term. This statement should set the organisation apart from those serving the same customer need."

Thompson (1990), defines strategy as, "the MEANS by which organisations meet or seek to meet, OBJECTIVES. There can be a strategy for each product or service, and an overall strategy for the organisation. It can be seen that the terms

used for vision, mission and strategy are partly overlapping and not clearly distinguished. This is reflected in variation in organisational practices.

Hospital A's mission statement includes a statement of purpose and organisational goals. It also includes core values which are parts of their organisational culture handed down from the Ministry of Health. Among core values are teamwork, professionalism, caring services and medical education.

FIGURE 6.2 ORGANISATIONAL STRATEGY FORMULATION



Source: Hospital A Annual Report 1999

6.2.1.3 INTERNAL CONTROL SYSTEMS

Since Hospital A has successfully attained the quality award, that is Malaysian Society for Quality in Healthcare (MSQH) and MS ISO 9002, the audit results form a subset of the overall performance measurement systems. Performance indicators were collected and reviewed weekly by departmental managers and monthly by top management. The information was formally collected by the Record and Documentation department and then communicated across the organisation.

Since the system was implemented within the past three years, Hospital A used internal benchmarking to set the standard for the indicators. From the league table (table 6.2), only six (6) departments do not meet target, out of 24 departments that submitted their indicators.

The following are departmental indicators collected by Hospital A. It is reported in the form of a 'league table'. These indicators are reviewed quarterly to check any substandard performance. This is a form of surveillance system that Hospital A implemented. So far, according to the director and head of department, they have not encountered any problems with the review. Every quarter the department submits the indicators. These indicators are the result of a government requirement in reporting systems for the public sector. The indicators are cascaded down from top management to operational units. Appendix 11 lists indicators that have been compiled by the Record and Documentation department since 1997. The head of department, after extensive discussions with members, then decided on the indicators reported to the top management. The management then compiled the report to be reviewed by the committee to see if there were any outliers in their performance. The outliers are then reported to the Ministry of Health for further

processing. Activities pertaining to Ministry of Health, Kuala Lumpur have been discussed in Chapter Three. Upon review from the Ministry, an auditor is sent to the 'outliers hospital' for routine checkup of procedures and practices. The Ministry of Health also performed compliance audit on a quarterly basis. The audit is then delegated to the state level (branch office). These procedures have been discussed in Chapter Three of the thesis.

TABLE 6.2 INDICATORS REPORT FOR MANAGEMENT REVIEW

No	Department	Indicator	Standard	Quarter1	Quarter2
1.	Revenue	to ensure collection from debtors	80%	83.8%	85.5%
2.	Dermatology	Psoriasis patient return to work	80%	90%	96.6%
3.	Emergency	toilet & suturing wound breakdown	<10%	8.5%	**11.4%**
4.	Nursing College	Passes in final examination	90%	95.7%	n/a
5.	O&G	episiotomy wound breakdown	<5%	6.1%	3.3%
6.	Med Record	medical reports ready within 4 weeks	85%	n/a	96.3%
7.	Ophatamology	post-operative wound infection rate in elective cataract surgery	<5%	n/a	1.1%
8.	Pathology	urine contamination rate	<10%	17.9%	**13.2%**
9.	ENT	myringoplasty success rate	>85%	**n/a**	**nil**
10.	Pharmacy	proportions of wards inspections done to the number of wards functioning	100%	100%	100%
11.	Dietetics	monitor zero error in servings patient meals	0%	n/a	**2.9%**
		mainatain cleanliness in food premises in accordance to section 10&11 Food Act 1983	>70%	**not monitored**	
12.	Medicine	thrombolytic therapy-door to needle timeis less than 1 hr from the time registration at casualty to administration of streptokinase. in CCU	100%	41%	**66.7%**
13.	Surgery	The rate of appendectomy in patients suspected of acute appendicitis but histologically proven normal appendix	<20%	0.02%	2.4%
14.	Orthopaedic	waiting time for open fracture less than 8hrs	100%	n/a	**4.7%**
		discharge rate	<5%	n/a	**5.8%**
15.	Anaesthesiology	patient admitted to general ICU should have TISS (Therapeutic Intervention Scoring System) Of greater/equal to 20 on first day admission	90%	98.9%	95.3%
16.	Imaging	all special examinations (ultrasound, CT scan, fluoroscopy case) will be reported within 3 working days.	100%	n/a	100%
17.	Physiotherapy	to reduce number of re-referral rate from ortho clinics	<30%	not monitored yet	
18.	Physchiatric	re-admission rate should not occur within 3-months in Dahlia ward	<15%	15.2%	14.3%
19.	Administration	Inter-departmental letters not received	<3%	0.2%	0.5%

20.	Finance	processing of travel allowances & overtime for staff to cashier office within 14 days from date of receipt from staff	100%	95%	**97.5%**
21.	Community	cases referred to the unit be extended psychosocial assistance	85%	89%	95.5%
22.	Day care	'no show' at day care centre. Defaulting scope appointment	<10%	9.6%	8.7%
23.	Paediatric	Neonatal nosocomial infection rate	<5.0%	2.5%	3.0%
24.	Occupational therapy	patient with burn wound is provided 2 pressure garment before discharged from burn unit	90%	n/a	70%

Source: Hospital A Annual Report 2000

6.2.1.4 MANAGING PROCESSES

Hospital A is committed to monitoring and reviewing its key performance indicators in all departments. With this routine exercise, top management can identify priorities in the systems. Non-financial measures are communicated across the organisation so that members understand and achieve through teamwork the targets set by management. The process owner is responsible for performance measurement at the operational level. Ownership is defined by responsibility, and in the quality manual in the organisation. All processes, critical and non-critical, have been defined in the quality manuals. There is an integrated computer system, even though less sophisticated than the private hospital, but able to capture and transfer automated data to the process owner. If performance fails to meet targets set by top management, either internal or external drivers, problems will be analysed and addressed. Hospital A has a comprehensive quality manual that lays down all organisational policies, clinical and non-clinical functions. This is the result of MS ISO 9002 audit.

Many activities have been implemented by top management to inculcate a quality culture among its employees. One of the quality movements that gains wide

recognition from the top management of hospital A to the Ministry level is 'Kumpulan

Meningkat Mutu Kerja' (KMK). It is like a quality circle where employees from various levels form a group to churn out ideas to in order to improve quality in their workplace. This activities will be exemplified later in the section. The other movement is DIY, as the name implies do-it-yourself, Quality Assurance Programme (QAP) and many other deliberate activities formed to nurture the quality improvement processes within the organisation.

Quality activities in Hospital A are prevalent as quality manuals are produced to assist employees in their pursuit of quality. Quality systems are reviewed twice in a calender year. The review is a form of formal feedback to the top management. The review committee is comprise of:

TABLE 6.3 COMMITTEE RESPONSIBLE FOR QUALITY REVIEW

No	Designation	Responsibility	Attendance
1.	Hospital Director	Chairman	Compulsory
2.	Deputy Director	Vice Chairman	Compulsory
3.	Head of Emergency	Secretary	Compulsory
4.	Head of Pharmacy	2nd Secretary	Compulsory
5.	Health Official	Member	Compulsory (external)
6.	Head of Medical	Member	Compulsory
7.	Head of Anaesthesiology	Member	or reps
8.	Head of Imaging	Member	or reps
9.	Head of Nephrology	Member	or reps
10.	Head of Pathology	Member	or reps
11.	Head of Dietetic	Member	or reps
12.	Head of Physiotherapy	Member	or reps
13.	Head of Occupational therapy	Member	or reps
14.	Matron	Member	Compulsory

Source: Hospital A Quality Manual

To ensure proper compliance and implementation of quality policies, hospital A formed a Quality Assurance Committee whose responsibility is to overlook quality

activities throughout the organisation. Hospital A defined and documented their quality management systems to ensure that all services met requirements.

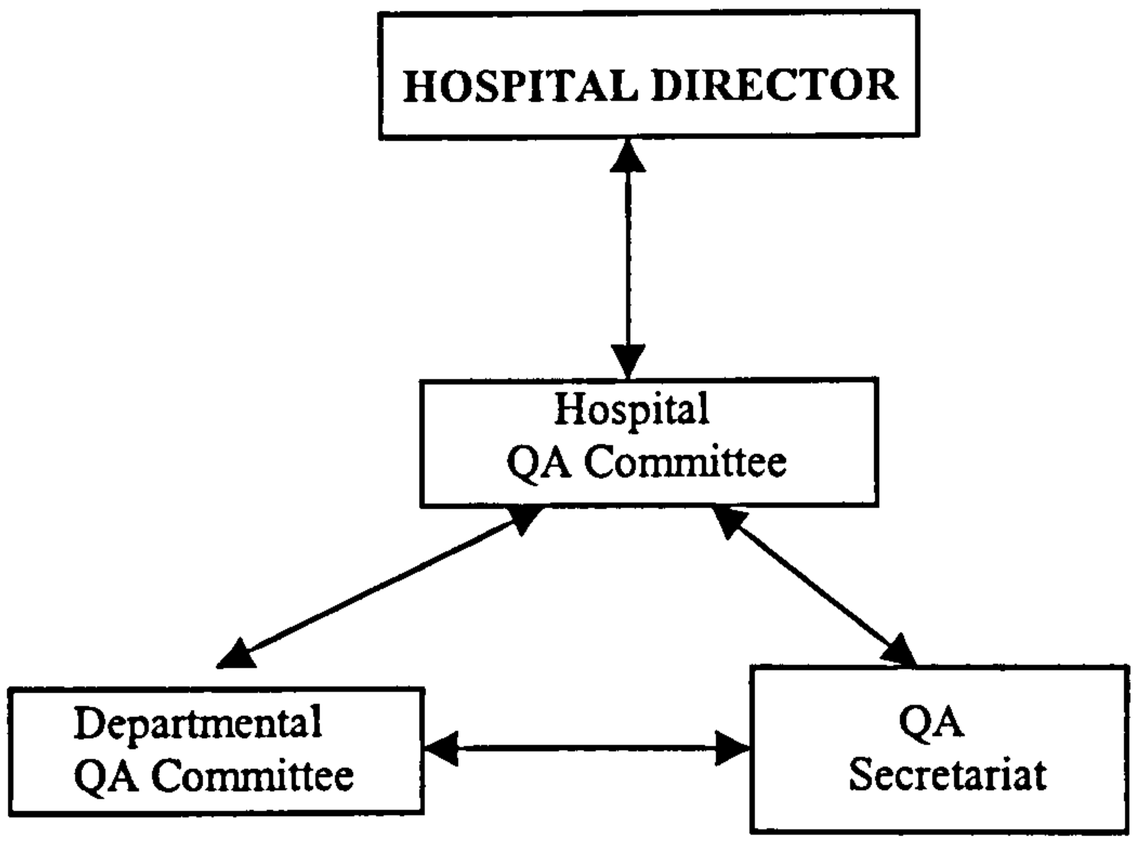


FIGURE 6.3 QUALITY ASSURANCE COMMITTEE

The following is the structure of their documentation systems in the organisation.

TABLE 6.4 HOSPITAL A DOCUMENTATION SYSTEMS

Document	Description
1. Quality manual (Policy document)	The outline of the implemented quality management system in accordance with organisation business process
2. Quality procedures	Procedures that relate on how the quality management systems are implemented and maintained. They essentially describe how work is managed in the organisation
3. Protocol/User manual/ manual/work instruction	Detailed descriptions of specific areas and details of work performance
4. Acts and Regulations	Establish the basis of responsibilities as a government entity that serves the public
5. Records	Documentary evidence of work that was performed.

Source: Hospital A Quality Manual

During the interview, the researcher was referred to the head of department, Documentation and Record, a newly created department for the purpose of data

collection. This department is in charge of statistics, records and reports for the entire organisation. The head of the department is a biostatistician. Her job entails getting information into the databases that are in-progress during the interview. Hospital A is pooling indicators for top management to systematically review the database. This centralised information system will assist the director and its committee to set priorities and targets. This 'performance measurement system' has all the indicators, from the operational level (department) to the strategic level (Ministry of Health, Kuala Lumpur). This information is then fed back to the employees to reflect the performance that has been achieved.

Hospital A not only has an information system to assist in its quality initiatives, but also a system of feedback from customers, employees, suppliers and other stakeholders about its current performance. This is done on a yearly basis where a survey will be carried out to see if there are any comments and complaints from various stakeholders. These complaints are then further analysed so that action in the form of remedial can be taken to rectify the problematic areas.

The researcher posed the question to the interviewees (five heads of department and the deputy director), how does the performance measurement system help them in managing the process in the organisation? The answer received was very positive, with most are saying "there is no doubt that the system works very well" while some attribute the success to the "people factor", meaning hard work and motivation to succeed.

6.2.1.5 Characteristics of Hospital A

In order to fully understand Hospital A, as advocated by Kuo, Dun and Randhawa (1999), this section is devoted to describing characteristics of the organisation. These characteristics state the nature of the hospital's activities (table 1, table 2 and table 7), patient capacity (table 3, table 4, table 5, table 6, table 8 and table 9) and other types of information obtained during the interviews. This is displayed in Appendix 13 with nine (9) tables. Hospital A falls into the extra large hospital category with 700 beds. It is staffed by more than 1,200 skilled workers. One of the achievements of hospital A is its capability in earning quality awards. This is due to its workers dedication and commitment to quality movement. Appendices 10, 11 and 14 show achievement so far for Hospital A in chronological order. These achievements are reported in the annual report of hospital A and have been compiled accordingly in the appendix sections as suggested by Patton (1990).

The following is an index of information collated during interviews and tabulated for easy retrieval.

Table 1	Outpatient Clinic by Department 1999
Table 2	Inpatient Clinic by Department 1999
Table 3	Hospital Bed Usage
Table 4	Outpatient Clinic Registration
Table 5	Pathology Laboratory Test
Table 6	Laboratory Test by Types
Table 7	Occupancy Rate and Length of Stay
Table 8	Surgery by Types
Table 9	Radiology Workload by Types

The tables above, demonstrate that Hospital A's workload, coping with daily operations of hospitals, as all department are overloaded and under capacity.

6.2.2 HOSPITAL B

6.2.2.1 BACKGROUND INFORMATION

Hospital B was built in response to the increasing demand for healthcare services from the local population. It was built in October 1991 at a cost of RM 92.2 million, and open fully in April 1995. To date the hospital serves as a referral centre with various specialities available. Hospital B was meant to serve the population of half a million people in the locality. It was deliberately built near a major North-South highway, the transit backbone of Malaysia, making it easily accessible to patients, especially the Accident and Emergency Department. As you will see from the operational statistics presented in Appendix 16, road accidents and injuries are the number one reason for admission to the hospital. The hospital has a capacity of 314 beds, and consists of 12 fully functional wards. The hospital currently has 988 skilled employees.

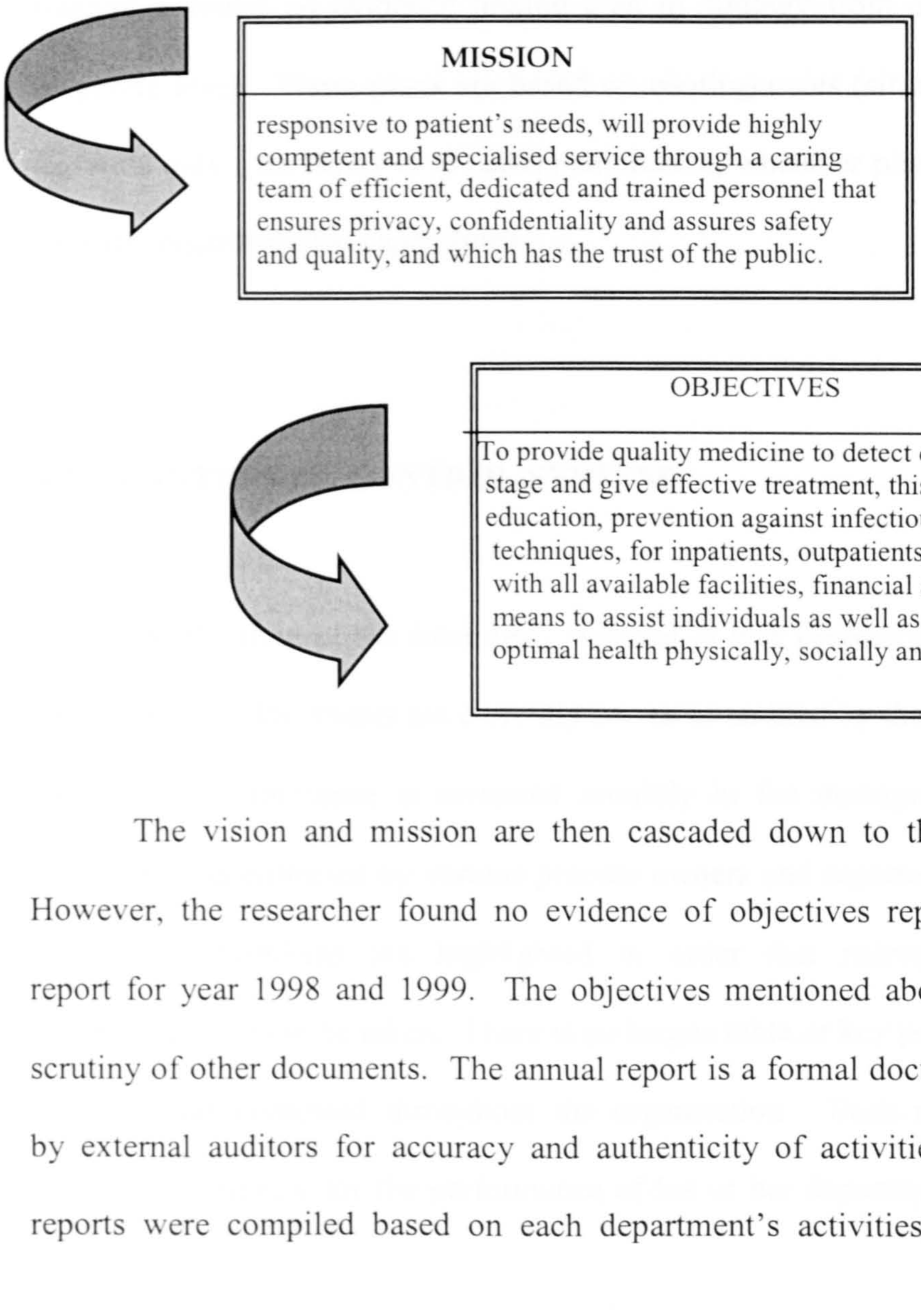
This is the first public hospital in Malaysia built with a 'hospital nucleus' concept, which derived from the Department of Health and Department of Social Security, United Kingdom in the early seventies. Hospital B was chosen for the case study because of its low CSF index which position the organisation in quadrant two (public hospital with ***LOW*** performance).

6.2.2.2. STRATEGY FORMULATION AND DEPLOYMENT

Hospital B's vision is to enhance quality of life. It aims to achieve this "by being the centre par excellence in the Northern States for professional, expertise and

training in healthcare, health promotion and rehabilitation" (Annual Report 1999). The vision, mission and objectives of Hospital B are as follows:

FIGURE 6.4 ORGANISATIONAL STRATEGY FORMULATION



The vision and mission are then cascaded down to the operational level. However, the researcher found no evidence of objectives reported in the annual report for year 1998 and 1999. The objectives mentioned above are the result of scrutiny of other documents. The annual report is a formal document that is audited by external auditors for accuracy and authenticity of activities carried out. The reports were compiled based on each department's activities, thereby creating a

fragmentation in the reporting systems, based on the annual report given to the researcher. There has been an extensive debate in the performance measurement literature on what constitutes a good measure, in terms of difficulty in quantifying and collecting the measures. As long as it is relevant and important, the organisation will benefit from it as it will reflect the true picture of the organisation's state. There is no uniform structure in the report, thus making data collection difficult.

Hospital B has strategic planning developed by each departmental head. These plans are then forwarded to top management for review. However, the researcher found no evidence linking plan to strategy from departmental level to corporate level. These plans are based on contingencies (situational) applicable to the units only. As Neely et al (2001) emphasise, whatever plan is developed has to consider organisational capabilities.

6.2.2.3 INTERNAL CONTROL SYSTEMS

At the time of the interview, Hospital B was preparing for an audit of MS ISO 9000. All documents are currently set to be audited by the professional body in Malaysia. Performance is reviewed monthly in the management meeting. The information is collected by various process owners and reported to the management meetings. Problems are highlighted in order that management can suggest alternative action to be taken. There is no league table or key performance indicators that are communicated throughout the organisation. Each departmental head is responsible entirely for the performance of his or her department, as highlighted in

the previous section. The heads in turn rely on the process owners in determining critical and non-critical processes for which the research found no evidence.

6.2.2.4. MANAGING PROCESS

Hospital B does not define its critical and non-critical processes, as such key performance indicators are not identified. The process owner is entirely responsible for determining quality standards. Performance information is stored manually by the process owner, and is communicated in a monthly meeting to the Director. The researcher found that data collection is not a formal activity. It is at the discretion of the process owner, who plays a dual role of physician and administrator, and struggle to find time to report useful and relevant indicators to the organisation. There is no division created or person responsible to ensure that data collected are valid and accurate.

The researcher also discovered that so far there are no initiatives on the part of the management team to get feedback on patients receiving treatment in Hospital B. The medical department recently proposed feedback from patients in evaluating the level of service they receive in the hospital. From the researcher's interview with the Ministry of Health, Kuala Lumpur, the Deputy-Director is not surprise that hospital B emerged in quadrant 3 since its has a reputation for non-conformance among hospitals in Malaysia. Numerous complaints received regarding Hospital B have been communicated to the Ministry. This under-performance can be confirmed by the researcher in observing operations flow in the hospital's visiting hours as

compared to other hospitals visited. The conditions have been compromised in a lot of ways.

6.2.2.5 Characteristics of Hospital B

This section intends to describe the characteristics of the organisation under study. This section will highlight the workload (table 3, table 4,table 5, table 6, table 7, and table 8) activities (table 1 and table 2) and under capacity that hospital B carries. This can be seen in Appendix 16. From the researcher's observation during the fieldwork, negative comments were received from heads of department about increasing workload and acute shortage of staff. Regarding performance measurement system, the administrators believe it to be "too advanced" and some commented, "it will not work because the groundwork is not ready" , and so on. The researcher believes that Hospital B suffers from a symptom of 'organisational lethargy'. The following is the index of information collated during interviews and tabulated for easy retrieval.

Table 1 Types of Revenue Generated
Table 2 Bed Utilisation
Table 3 Dietetic Workload
Table 4 Physiotherapy Workload
Table 5 Anaethesiology Workload
Table 6 Imaging and Diagnostic Workload
Table 7 Pharmacy Workload
Table 8 Pathology Workload

The above tables demonstrate the workload of Hospital B that reflects the organisation's capabilities to service the population.

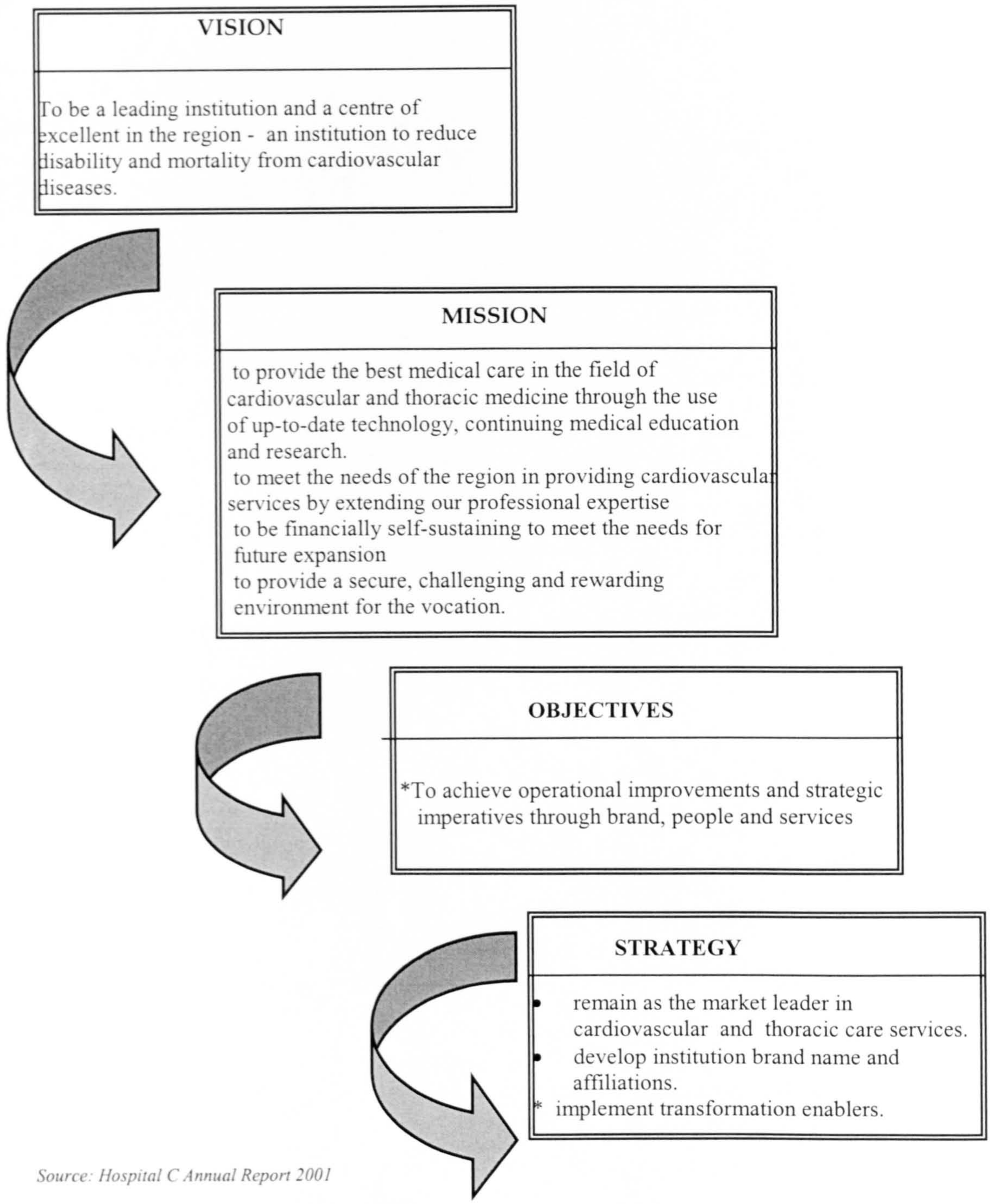
6.2.3. HOSPITAL C

6.2.3.1 BACKGROUND INFORMATION

Hospital C started operating in June 1992, and was officially opened by the honourable Prime Minister, Dato Seri Dr Mahathir Mohamed. The institute was masterminded by the Prime Minister himself. After three years of commencement, the institute was corporatised in order to give full benefits to the employees as well to grow along with the market niche. Once corporatised, Hospital C no longer under the aegis of the Ministry of Health (governmental unit). To date the hospital has a capacity of almost 300 beds with 700 experienced staff. One of the chairmen called it " a recognised centre of excellent for cardiovascular medicine", and it is the referral centre for the Asia Pacific Region. Hospital C was selected based on CSF, by which the organisation is position in quadrant 4 (private hospital with ***High*** performance).

6.2.3.2 STRATEGY FORMULATION AND DEPLOYMENT

Hospital C has a mission statement comprising of deliverables or values incorporated throughout its organisation. These core values are then cascaded down to the operational unit, as will be highlighted in the next section. Hospital C's vision is to "be a leading institution and a centre of excellence in the region". This can be seen from figure 6.5 as Hospital C's vision is translated into mission, objectives and corporate strategy.



Source: Hospital C Annual Report 2001

FIGURE 6.5 ORGANISATIONAL STRATEGY FORMULATION

The organisation has successfully identified key success factors in which these factors are cascaded/deployed to the operational level. These key success factors are: quality, cost and reputation. "Quality means competent manpower in

both the area of expertise in cardiovascular diseases and up-to-date technical know-how. Cost is in terms of changing competitive rates with acceptable waiting periods and Hospital C enjoys a reputation for its achievement and success as well as the medical care provided where the welfare of its patients is given the utmost priority" (Annual Report 2001).

6.2.3.3 INTERNAL CONTROL SYSTEMS

At the time of the interview, hospital C was engaged in 'Business Efficiency Enhancement Project' (BEep). This large scale project is done on an ad hoc basis, and its purpose is to evaluate organisational performance based on management prerogatives. This project looks into areas of cost, productivity improvement and business planning. BEep is important to management as it is the first step taken to assess/evaluate performance at the rudimentary levels. It is more of problem-based assessment to assist in understanding the business processes of Hospital C. In doing this it provides invaluable information to management as to their current performance. According to the Chief Executive Officer (CEO), areas that they are looking at the moment are :

1. Operating Theatre (OT)
2. Invasive Cardiovascular Laboratory (ICL)
3. Outpatient Department (OPD)
4. Coronary Care Unit (CCU)
5. Intensive Care Unit (ICU)
6. Pharmacy & Material Supply

These are the areas that require management attention as appendix 13 demonstrates the high intensity and large volume of activities within these areas. To steer the project successfully, the management committee has formed a taskforce.

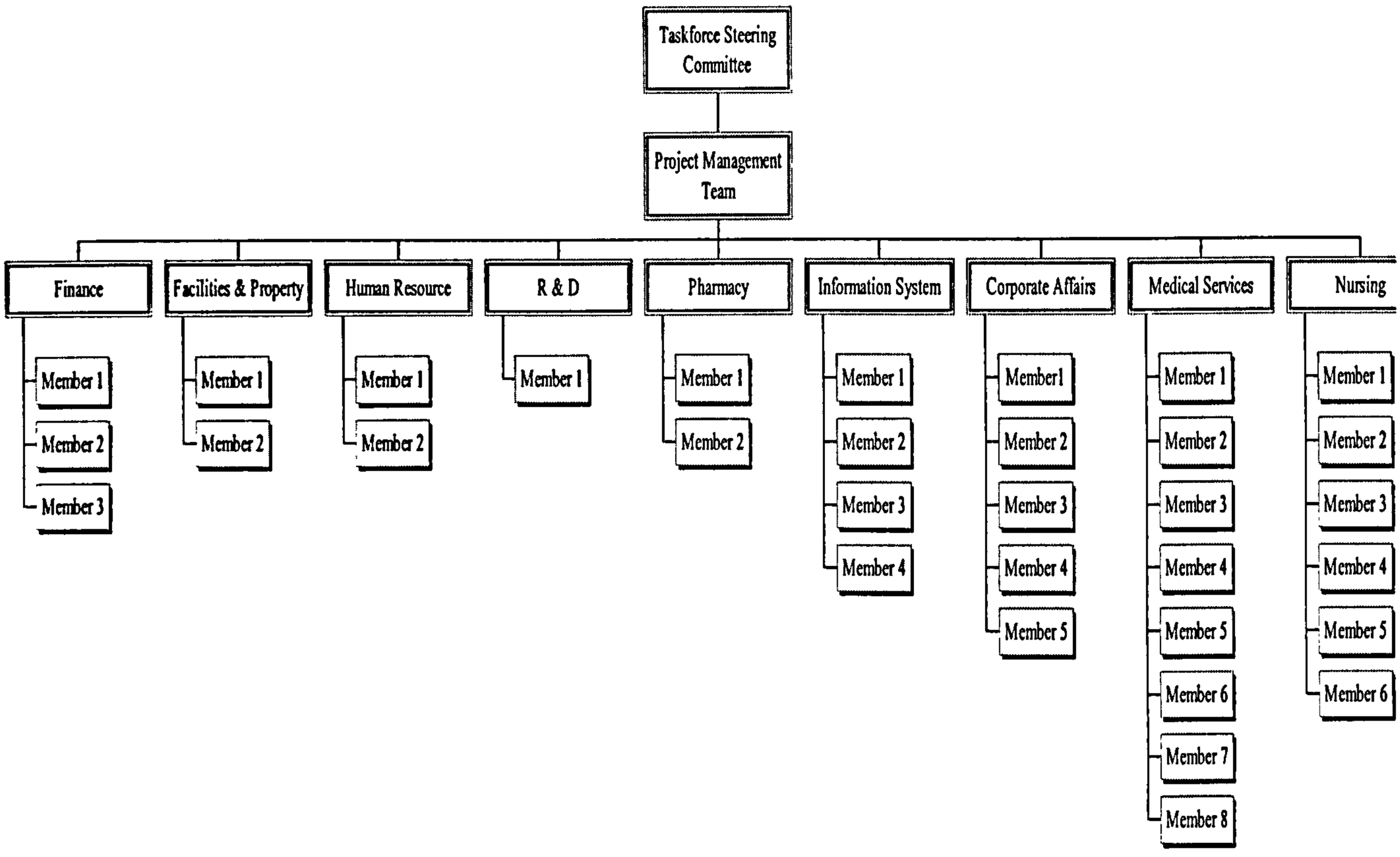
This taskforce was formed to accommodate the needs of the project. The project brings together expertise from various disciplines, thus enhancing synergy of the taskforce. The following is the structure used for the BEep taskforce. The taskforce were created to generate ideas about improvement of the priority areas. Committees were formed to carry out and ensure proper implementation of the plan across functions. The following are the committees, made up of heads of departments, mentioned above.

1. OT committee
2. ICL committee
3. ICU committee
4. CCU committee
5. Drugs & Therapeutic committee
6. Research & Development Committee
7. Electronic Medical Record Committee
8. New Block Committee

The researcher contacted some of the committee members and compiled results from this four-month-old project, as few of the recommendations and initiatives put forward have been successfully implemented. The results of this exercise can be seen in Appendix 17.

The management team assessed performance on a monthly basis. This review is conducted in a management committee meeting where league tables are presented for management attention. These 'league table' contain key performance indicators from various departments, and percentage changes and directions (increase/decrease) of specific indicators. The data are collected at operational level and compiled centrally through a computer mainframe (centrally located).

FIGURE 6.6 HOSPITAL C ORGANISATIONAL TASKFORCE



No formal measurement system existed in the organisation at the time of the interviews, but the management team emphasised that it is being taken up by the taskforce because the top management is unanimous in agreeing that performance measurement system is crucial in monitoring organisational output. According to the CEO, performance measurement systems will be fully implemented by year 2004.

At the moment, Hospital C uses internal benchmarking to set standards for their indicators, as no formal benchmark exists for private hospital performance in Malaysia. There is no collaborative effort, either in the public or the private sector, to set a best practice benchmark yet. Performance data are collected individually for organisational use only.

TABLE 6.5 MANAGEMENT COMMITTEE MEETING REPORT

Indicators	**Aug2001**	**Jul2001**	**Change**	**%Change**	**Direction**
Bed Occupancy rate (%)	75.5	82.4	-6.9	8.4	↓
Avg length of stay (days)	6.0	6.7	-0.7	10.4	↓
Total no of admission	904	978	-74	7.6	↓
Total no of discharge	955	938	17	1.8	↑
Total no of death	27	30	-3	10.0	↓
Total no of attendance	9,309	9,212	97	1.1	↑
Inpatient subsidy (poor)	251	242	9	3.7	↑
Outpatient subsidy (poor)	631	608	23	3.8	↑
Emergency	1,130	1,123	7	0.6	↑
Cardiothoracic	242	285	-43	15.1	↓
Cardiology	3,870	4,058	-188	4.6	↓
Laboratory	76,354	80,248	-3,894	4.9	↓
Radiology	2,208	2,425	-217	8.9	↓
Physiotherapy	2,915	3,109	-194	6.2	↓
Dietetic	343	379	-36	9.5	↓
Pharmacy	47,253	45,953	1,300	2.8	↑
Nuclear medicine	130	120	10	8.3	↑

6.2.3.4 MANAGING PROCESS

There are eight divisions in Hospital C and each division is broken down into various departments. The organisational chart can be seen in Appendix 11. Each department is responsible for its own performance. There are no formal procedures in setting up departmental goals but it has to be agreed upon by the management

team during the monthly meeting. These goals are then cascaded down throughout the organisation.

At the time of the interview, Hospital C was in the midst of registration for MS ISO 9000. All quality manual, operational plans are being streamlined for audit purposes. Proper documentation for quality improvement programmes is underway.

If daily performance fails to meet the target, the organisation investigates to find the root cause and corrective action is be taken immediately. Critical and non-critical processes have been identified throughout the organisation. Process owners are responsible for performance of their units, and this is reviewed in the monthly management meetings.

6.2.3.5 Characteristics of Hospital C

This section intends to describe characteristics of the organisation under study. These characteristics state the nature of hospital activities (table 1 and table 2), workload (table 3, table 6, table 7, table 8, table 10, table 11, table 12 and table 14) and capacity of the hospital in Appendices 18, 19 and 20. This section tries to demonstrate the hospital's pressure to perform regardless of its current performance. The motivation to service the population derive from its people's commitment and dedication to succeed. This drive has been inculcated from the top hierarchy (Ministry of Health) in the form of 'Corporate Culture' which has been communicated throughout hospitals in Malaysia. The researcher will highlight some of the statistics compiled by the organisation to illustrate the propensity of the workload that the organisation carries. Information is compiled in the form of data

displays as suggested by Miles and Hubberman (1999) in Appendix 18. Appendix 19 demonstrates outcomes and achievements as a result of good management practices. These outcomes have been reported in the Annual Report and the researcher has compiled the outcome and achievement according to year. This section illustrate that despite the healthcare constraints, Hospital C manages to maintain its reputation by means of hard work and continuous efforts to improve. This can be seen from its achievement in improving year after year (appendix 20). The following is the index of information collated during interviews and tabulated for easy retrieval.

Table 1	Bed Usage
Table 2	Bed Usage based on Wards
Table 3	Admission Worload (Inpatient and Outpatient)
Table 4	Subsidy Report
Table 5	Subsidy Profile
Table 6	Workload by Age and Sex
Table 7	Workload by State
Table 8	Outpatient Workload
Table 9	Summary of Cardiology & Cardiothoracic cases
Table 10	Emergency Department Workload
Table 11	Pathology Workload
Table 12	Radiology Worload
Table 13	Physiotherapy Treatment
Table 14	Pharmacy department workload
Table 15	Nuclear Medicine Investigation Workload

The tables above show the workload and capacity of the hospital in treating patients in the facilities. Looking at these tables, it can be deduced that facilities are overused, under capacity and understaffed.

6.2.4 HOSPITAL D

6.2.4.1 BACKGROUND INFORMATION

Hospital D was incorporated in December 1996 by the Healthcare Group Division. It is conveniently located in the town centre in Pahang. To date the hospital has a capacity of 61 beds with 120 skilled employees. The hospital operates 24 hours to cater for local needs, and is the only hospital open within a radius of a thousand miles. Hospital D is a subsidiary company of a giant conglomerate established in the East Coast region. This organisation involved in diverse activities from trading and marketing crude palm oil to management of fast food franchises. It has been floated itself on the Kuala Lumpur Stock Exchang.

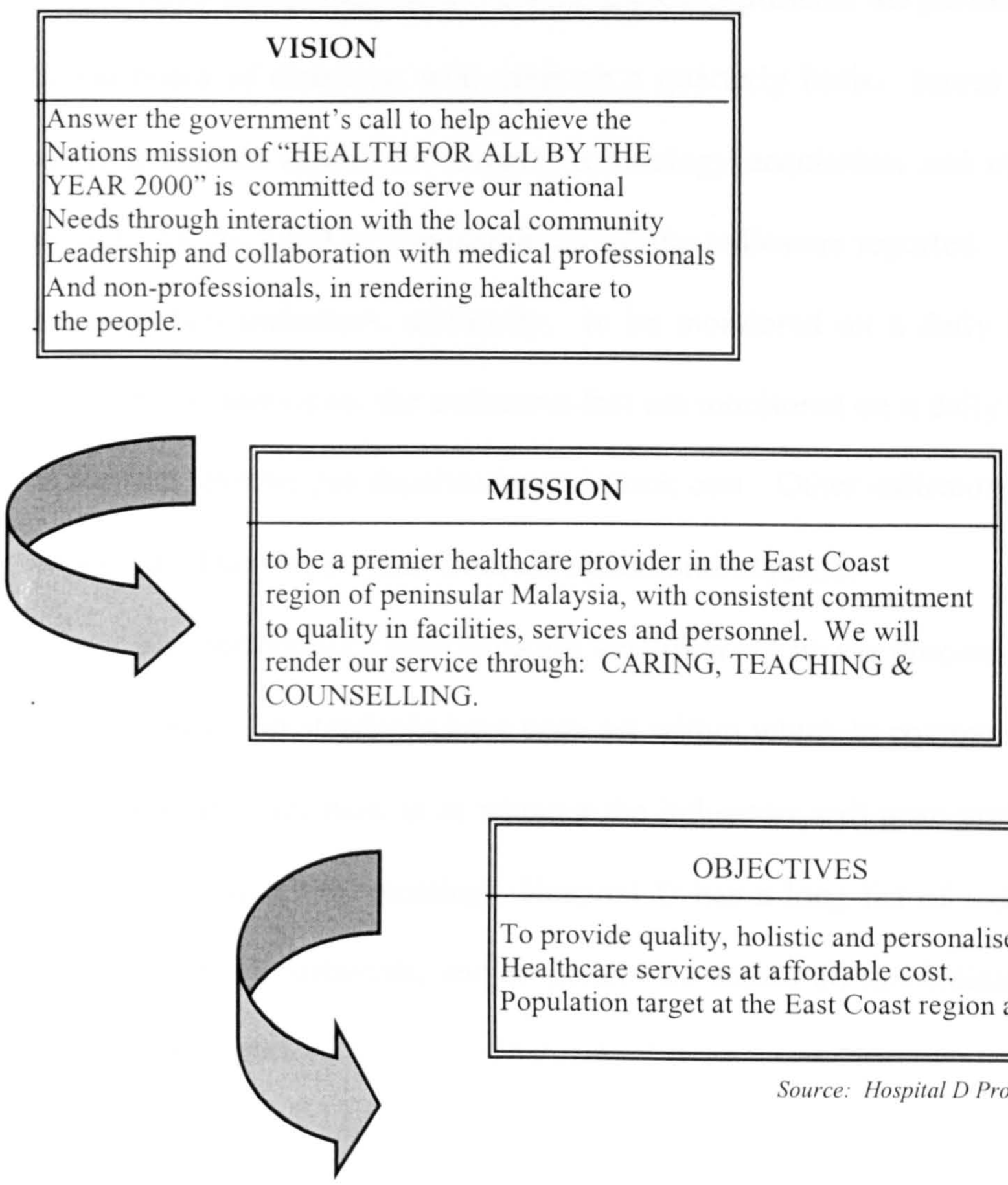
Hospital D was chosen for the case study for its low CSF index which positions the organisation in quadrant 4 (private hospital with **LOW** performance). The researcher also discovered that in 1997 Hospital D accumulated losses of RM 958,613 with a turnover of RM 311,239. However, in 1998 there was an increase in turnover of RM 3,760,266, which is ten times that of the previous year, yet still the hospital is losing money, with accumulated losses of RM 2,980,449 (Audited Account).

6.2.4.2 STRATEGY FORMULATION AND DEPLOYMENT

Hospital D aligns its vision with the Ministry of Health mission, that is "Health for all by the year 2000". It translates the vision into core values that the organisation shares, that is to be a premier hospital in the East Coast region. As

noted in Chapter Three, the East Coast region is a region that is less attractive for a business venture. As a result of this, public amenities are less concentrated and sparsely located throughout the East Coast. Hospital D see this as an opportunity to serve a percentage of the market share.

FIGURE 6.7 ORGANISATIONAL STRATEGY FORMULATION



Source: Hospital D Progress Report 2000

6.2.4.3 INTERNAL CONTROL SYSTEMS

Performance indicators are collected at the operational level and collated for management meetings on a monthly basis. The Secretary is responsible to collect

data to be compiled for management meetings. Then a progress report is manually compiled with all indicators according to department. This is in the form of a league table in which the performance of individual departments is reported. Any discrepancies or variances highlighted are brought up in the meeting. If performance fails to meet the target, an alternative course is taken to rectify the situation.

After the management meeting, the CEO presents the performance indicators to the board of directors, who meet on a quarterly basis. Issues presented in the meeting include capital investment, technology acquisition and other matters. In Hospital D, the CEO is responsible for all the indicators reported. The CEO selects the important indicators, arbitrarily, to be monitored on a daily basis. From the researcher's interviews, the indicators that are monitored on a daily basis are volume of service, revenue per department and stock cost. Other indicators are deemed less important. This can be seen from the operational statistics.

The performance indicators are identified not by the process owner but by the CEO himself. No standards have been set within which to compare indicators. The CEO uses his judgement as to whether the indicators will pose problems for him at the board of directors' meeting. Hospital D has a long list of indicators extracted from different departments, and Appendix 21 shows all the indicators compiled in the progress report.

6.2.4.4 MANAGING PROCESS

Hospital D does not identify critical and non-critical processes within the organisation. Performance indicators are collected based on the CEO's

judgement of their usefulness. The CEO is responsible for the indicators that do not meet their target, and this is communicated back to the process owner for further action. These performance indicators are then brought to the management meeting to review performance on the monthly basis. Recently, the newly created Marketing and Public Relation Department have been giving questionnaires to patients before discharge, in order to evaluate the level of service that the patients received in the ward. The Marketing and Public Relations Department functions as a buffer between the organisation and the environment. This will assist the organisation in understanding patients' needs and requirements in a service environment, thereby bringing in more patients and generating more business and revenue.

The researcher in this case study had the opportunity to make ward rounds to see patients' condition at first hand. There are four wards in operations. To the researcher's observation, the ward looked empty, looking as though not many patients come to Hospital D for treatment. The CEO pointed out that patient attendance is a seasonal factor. Before ending the interviews, the researcher asked the CEO about the implementation of performance measurement systems in the future. The CEO replied that it was "too early to think of measurement systems when the structure of reporting is still at the infant stage." Moreover, he points out that his responsibility is making money for the organisation so that the board of directors will be pleased with his performance.

6.2.4.5 Characteristics of Hospital D

This section intends to highlight statistics or indicators that have been compiled by the organisations (appendix 21). The objective of this section is to present the workload or burden (table 1, table 4, table 5) and capacities (table 2 and table 3) that the organisation carries which have a tremendous impact on the performance of the organisation directly as well as indirectly. The following are indexes of information collated during interviews and tabulated for easy retrieval. The following is the index of information collated during interviews and tabulated for easy retrieval.

Table 1	Admission Workload (Inpatient and Outpatient)
Table 2	Operating Theatre Capacity
Table 3	Number of Prescription (Pharmacy Department)
Table 4	Pathology Workload
Table 5	Radiology Workload
Table 6	Profit and Loss Account
Table 7	Debtors'Ageing Report

The above tables highlight the workload that hospitals have to carry in order to service the population. All departments show under capacity with shortage of skilled personnel.

6.2.5 CONCLUSION

The case studies revealed that a performance measurement system leads to better performance for an organisation. Three distinct elements of performance measurement systems can be identified using Donabedian approaches in the case studies. These are:

1. Strategy formulation and deployment - This includes vision and mission clearly stated, critical success factors and key performance indicators identified within the organisations.
2. Internal Control System - This includes quality systems, audit and any quality improvement initiatives engaged within the case study organisation as evidence to performance measurement system.
3. Managing process - This includes performance review, assessment and monitoring of the system

The case studies suggest that performance measurement was found to be most successful in organisations that have all the characteristics listed above. Successful use of performance measurement appears to be closely linked at the strategic and operational levels. This is a deployment issue that has been addressed in the previous section. It is probably not coincidental that a line can be drawn between high and low performance as can be seen in the next section.

6.3 CROSS-CASE ANALYSIS

6.3.1 Background Information

The purpose of cross-case analysis is to look into differences and similarities among cases to help the researcher to understand the underlying patterns that emerge from the study. Eisendhart (1989) suggests that, "searching for patterns across cases forces the researcher to go beyond initial impressions and look at the data in divergent ways." He further advises that cross-cases are driven by the reality that

people are poor processors of information. This technique of studying the data will assist the researcher to decrease the potential for errors and bias. Patterns in qualitative data can be represented as dimensions, categories, schemes and themes (Patton 1990). This is similar to Yin (1994), replication logic, or pattern matching or similar to that used in multiple-experiments. In this study, research questions were used as categories to look for within-cases and across-cases.

The within-case analysis in the previous section generates a preliminary model of performance measurement systems. This section will further develope and refine the model as suggested by Eisenhardt (1989). The cases are arranged in tabular forms as proposed by Miles and Huberman (1999).

6.3.2 STRATEGY FORMULATION AND DEPLOYMENT

Table 6.6 demonstrates aspects of strategy development and deployment used in the case study.

Table 6.6 STRATEGY FORMULATION AND DEPLOYMENT

Cases	Mission	CSF	Formal systems	Process identified
A	Yes	Yes	Yes	Yes
B	Yes	No	No	Yes
C	Yes	Yes	No	No
D	Yes	No	No	No

Key to responses:
Mission : hospitals have developed a mission statement to be cascaded down to operational level (also including vision, objectives, statement of values etc)

CSF : hospitals have developed a set of quantifiable critical success factors (CSF)

Formal systems : hospitals have developed formal systems for the development of performance measurement

Process identified : hospitals have mapped and documented processes in the forms of flowchart, operational plan and other mapping tools.

It can be seen from table 6.6 that all the organisations under study, regardless of performance, have developed mission statements. Hospital A and C 's mission statements are formulated internally, while hospital B and D have developed them externally, that is mission statements based on Ministry of Health's vision. Either ways the purpose of the mission statement is to guide the organisation on its journey.

Hospital A has identified its critical success factors at the strategic level. This identification of CSF is accompanied by key performance indicators (KPI). These KPI were defined based on the process owner, while Hospitals B and D do not define their CSF. Moreover, Hospitals B and D have not identified critical and non-critical processes at all.

Of the four cases presented, only organisation A has made performance measurement a formal system. This is done through an ad hoc department. The Department of Record and Documentation was created to cater for data collection needs. Organisation C identifies critical and non-critical processes, but does not define key performance indicators. The accounts department compiles operational statistics data to monitor and control performance on a monthly basis. This data is centrally located in the mainframe to be extracted later for management and board meetings. Organisations B and D face a different scenario of management control. They have not identified critical processes and therefore no formal system exists as far as the researcher could see during the fieldwork. These organisations depend solely on the process owner to monitor and control performance at various levels of the organisation.

Only Hospital D do not map and document its processes. The researcher believes that the first step to manage is to define and identify processes.

These activities are the responsibility of the process owner, that is the physician in charge. The CEO has the duty of checking and monitoring performance on a daily and weekly basis. Part of the CEO's daily routine is to check the number of patient admissions at the front desk every morning. This gives him first hand information on the volume of services the organisation has to deal with each day. Moreover, the CEO is able to check the day-to-day working of the hospital because of its manageable size (61-bed capacity with 66% occupancy rate). On the hand, other hospitals, especially the public ones, map and document their processes. The Ministry of Health, in its pursuit of excellence, takes a great interest in mapping and documenting processes and all public hospitals will be accredited by the year 2004. This information has been communicated in a press release in a local Malaysian newspaper. This has been discussed in Chapter Three of this thesis. In these case studies, Hospital A, B and C have either embarked or are about to embark on improvement programmes such as MS ISO 9000 or are accredited by Malaysian Society for Quality in Healthcare (MSQH).

Strategy formulation appears to receive much attention in the case studies. All cases reported formulate their strategy and critical factors accordingly. However, deployment of strategy to operational level is somewhat less clear. There is no guideline or framework established to formalise the deployment of strategy. However, the researcher believes that feedback from process owners is a form of deployment activity, but that instead of a top-down it is a bottom-up approach. All cases reported the process owners' responsibility to highlight and collect data to be communicated to the top management of the organisations. This gives some form of organisational control.

One aspect of deployment is the communication strategy used in the organisations. As stated earlier there are no clear techniques to deploy strategy to the operational levels. Communication is important in measuring performance; Lockamy (1993) advocates that performance measurement acts as a bridge between top floor and shop floor. It is a vital linkage that aligns strategy with objectives. Table 6.6 shows the communication that exists in the organisations.

TABLE 6.7 COMMUNICATION ACROSS ORGANISATIONS

Cases	Mission	Target	Feedback	Structure (Q)	Tools
A	Yes	Yes	Yes	Yes	1,2,3,4,5,6,7
B	Yes	No	No	No	4,5,7
C	Yes	No	Yes	Yes	1,2,3,4,5,6,7
D	Yes	No	Yes	No	2,4,5,7

Key to responses:
Mission: organisation vision, mission and objectives are written organisation-wide.
Target: organisation set target for department/process owner to achieve.
Feedback: feedback performance from patients, suppliers, employees etc.
Structure (Q): Is there a quality structure built within organisation to cater for measurement system?
Tools: Communication tools used to carry message

1. Newsletter
2. Charts
3. Personalised report
4. Meeting with managers
5. computer-generated report
6. find information yourself
7. Notes/memo

Table 6.7 shows ranges of communication across organisations. In the case studies, top management relies on various tools of communication to relay information to employees, thus reinforcing methods across the organisation. This approach of reinforcement in communication is discussed by McKinnon and Burns (1992), as the "information mosaic".

Table 6.7 shows that most the widely used communication techniques across organisations are meetings with managers, computer-generated reports and

notes/memos. This is supported in the survey, as these tools are the most effective tools in communication. Most organisations in Malaysia prefer to use the above tools rather than others. The least preferred are newsletters, personalised reports and finding information yourselves. These are less preferred because they relay less information and are time consuming.

Table 6.7 also shows that organisations with quality structure attached use more communication tools than other organisations without structure. This structure creates a robust reporting hierarchy to cater for the performance measurement system, thereby assisting in the deployment of strategy in a top-down approach. It can be seen that high performing organisations have more structure than the low performing organisations.

6.3.3 INTERNAL CONTROL SYSTEMS

TABLE 6.8 PERFORMANCE MEASURES ACROSS CASES

Performance Measures	A	B	C	D	AVG
Customer satisfaction (3)	66.7%	33.3%	66.7%	50.0%	54.2%
Employees factors (4)	50.0	75.0	100.0	50.0	68.8
Quality cost (5)	40.0	0.0	60.0	0.0	25.0
Productivity (8)	25.0	25.0	37.5	25.0	28.1
Time-based performance (6)	50.0	16.7	83.3	33.3	45.8
Flexibility (2)	50.0	0.0	100.0	50.0	50.0
Social factors (2)	50.0	0.0	50.0	0.0	25.0
Shareholders (8)	25.0	0.0	62.5	75.0	40.6
AVG	44.6	18.8	70.0	35.4	

Key to responses
(3) : There are 3 performance indicators in the measurement.

Not all organisations under study developed key performance indicators. These indicators were created from the identification of processes as mentioned

earlier. The table above reinforces the concept of 'differential performance', which will be explained in the next section, based on performance measures in the case studies. Three performance measures achieved more than 50.0%, that is in customer satisfaction (54.2%), employee factors (68.8%) and flexibility measures (50.0%). These are indicators that are widely used in Malaysian healthcare organisations. Measures that are seldom used are quality cost (25.0%), social factors (25.0%) and productivity (28.1%). These findings are reinforced in the survey of the Malaysian population. Table 6.7 shows that Hospital B used the least performance indicators. The indicators most used are employee factors, which consist of employee turnover, training etc. On the other hand, Hospital C used the most performance indicators. Even though they do not have a formal measurement system, they have successfully identified critical and non-critical processes. This enables their reporting systems to be comprehensive in nature, and so they are able to have some form of organisational control.

Even Hospital A posses high performance properties, that is with a formal structure of performance measurement, but it still needs to further identify key performance indicators so that the current system can evolve and be nurtured into a full-blown system that is capable of managing the processes effectively.

Within organisations there is a marked difference in score for high and low performers. Public organisations score lower than the private organisations. This is comprehensible since public organisations practise medicine across a wider population than the private sector. Moreover, public hospitals are 'a regulated industry', fully controlled by the Ministry of Health, Kuala Lumpur, and these organisations have no autonomy. The private organisations, on the other hand, being

market-driven entities, are free to formulate strategies in line with their organisational capabilities which lead to bottom line profit. This is strongly reinforced by many of the health economists.

In analysing the organisations, the researcher looked for differences between high performance and low performance to see if the CSF approach used in the studies has differentiated this concept effectively. Some authors call these differences 'gap analysis', as in the articles by Parasuraman et al. The study of 'gaps' has been covered in the literature, gaining popularity recently as a tool to highlight problem areas in the field of study. However, this gap is not about perceptions and expectation, but about the differences between negative and positive responses of the respondents, as used to validate the CSF techniques. The higher the percentage of the differences, the wider the differences between the concepts, which means values are at the extreme and this is positive as differences give distinctiveness to the concepts (attributes). Table 6.8 shows that a number of performance measures are used to explicate this concept. The average differences were taken between sectors, public (44.6-18.8/18.8) and private (70.0-35.4/35.4), and between performance, high performance (70.0-44.6/44.6) and low performance (35.4-18.8/18.8). The analysis reveals that there is a wide difference between organisations (public and private sectors). The public shows a 137% difference while the private is less wide with 98% differences. If the differences are taken across sectors between organisations (high and low performance), the low performing organisations reveal an 88% gap and high performing 57%. These sectorial differences promote intra-learning among organisations which could enhance wisdom and values of performance measurement, as advocated by Feurer

and Chahrbaghi (1999). This supports the stringent rule that the researcher impose to surface out the organisations for the case studies. This validates the technique of CSF in the methodology. The schematic view is presented in figure 6.8.

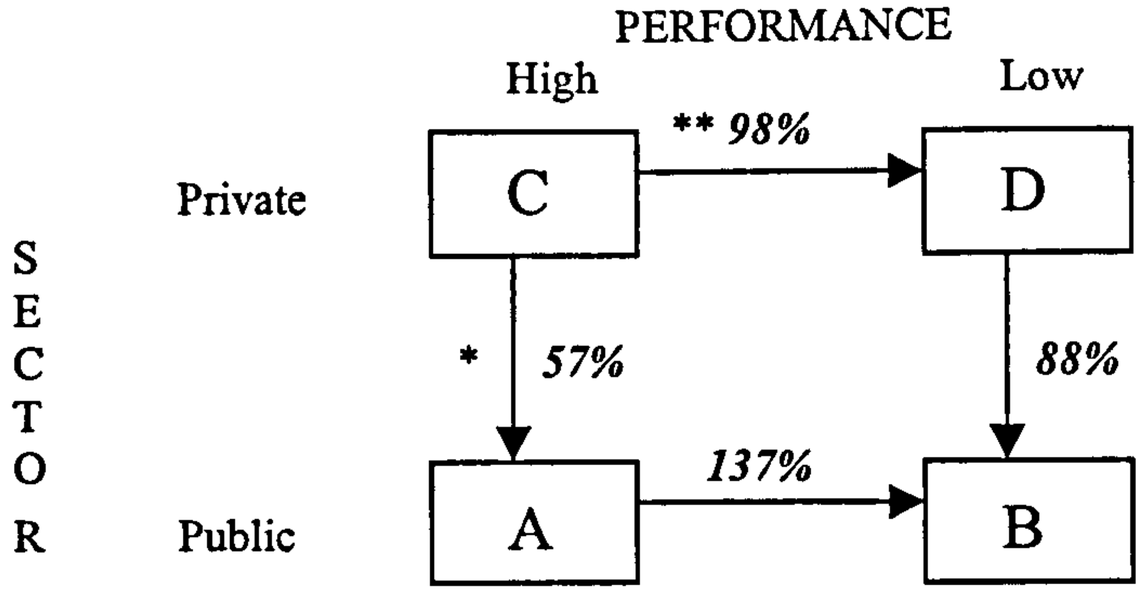


FIGURE 6.8 A SCHEMATIC VIEW OF PERFORMANCE DIFFERENTIAL CONCEPT

Based on the above illustration, the organisations in the case studies can learn from each other to improve performance in the long-run. The researcher will try to illuminate determinants of good and bad performance measurement systems in the later section, and this will serve as a guideline or framework for organisations on which to base their journeys. This will be beneficial even for organisations that have achieved a superior level of performance, for the top management will be made aware of pitfalls in the measurement agenda.

As part of the internal control systems, the researcher looked for quality systems that exist within the organisations. Quality systems, as mentioned earlier, are an important ingredient within the context of performance measurement systems, since performance measurement procedures are documented in quality manuals.

Two organisations (high performance) have successfully registered with MS ISO9000 and MSQH, while organisation B has minimal quality assurance activities. The reason behind this is a requirement from the Ministry of Health to embark on quality improvement programmes. All directors must assume the role of quality advisors to process owners in the public sector. The researcher could not find any quality activities in organisation D as the organisation is in the midst of turnaround, and the CEO is keener on improving the financial aspects of the business.

TABLE 6.9 SETTING STANDARDS

	Patient survey		Benchmarking		Assessment	
Case	potential	Ex	Internal	External	Self	Others
A	no	yes	yes	yes	no	yes
B	no	no	yes	yes	no	no
C	no	yes	yes	yes	yes	yes
D	no	yes	yes	yes	yes	no

Key to responses
Customer survey potential : survey potential patient
Ex patient: survey inpatient that is about to be discharged from the ward

Benchmarking: internal: benchmark within organisation
External: benchmark outside organisation (Ministry standard)

Assessment: self : assess performance based on within organisation criteria
Others: assess organisation by other standard (ISO9000)

There are many ways to set standards in an organisation. Table 6.9 demonstrates techniques used to set standards that will drive improvement efforts within organisations. Patient surveys are used to derive standards for organisations to improve. This is very fruitful for private organisations as they are market-driven and profit making entities. This can be seen in high performance hospitals where patients before discharge are asked questions about quality of services. This first hand information is received and fed into the measurement systems. An added benefit is that in doing this, the management reduces delays in waiting for discharge.

Patient complaint about waiting to have their bill processed before leaving, and keeping the patient busy by interviewing and briefing on medication and lifestyles can reduce these complaints while helping the hospital to perform better. Hospitals A and C can be seen to practise this approach.

The second method of setting standards is through benchmarking, internal (in terms of organisational units) or external (competitors or health authorities). A benchmark in this case can be defined as the comparison of performance of similar operations. All organisations in the case studies claim to use benchmarks internally and externally. The Ministry, as already discussed in Chapter Three, has succeeded publishing two important dimensions of indicators for comparison pruposes. These are the National Indicator and the Hospital Specific Indicator. These are available from the Ministry of Health, Kuala Lumpur.

Self-assessment can be defined as the "regular and systematic review of the organisation's activities and results" (European Foundation for Quality Management, 1994). Self-assessment is used to gauge effectiveness and efficiency within organisations. It is done on a yearly basis. Once measured it can be used to compare performance of the current year with previous years. Organisations C and D claim to use self-assessment exercises on a monthly basis. This is done by looking at the variances produced from each departments. Any substandard performance will be highlighted and an alternative course of action will be taken. This type of systematic performance monitoring has gained recognition from top management as it is simple to implement.

6.3.4 MANAGING PROCESS

6.3.4.1 Performance review

Setting a performance review is important in determining feedback for top management to act upon. This is supported by Zairi (1994), who argues that information unless acted upon is a waste of resources. The frequency of the formal reviews is used to detect management involvement in managing organisational processes.

TABLE 6.10 FREQUENCY OF FORMAL PERFORMANCE REVIEW

Performance factors	A	B	C	D
Delivery performance Daily	Quarterly	Annually	Monthly/Annually	
Customer satisfaction Monthly	Annually	-	Monthly/Annually	
Process time	Annually	Annually	Annually	-
Flexibility	-	-	Annually	-
Quality performance Monthly	Quarterly	Quarterly	Monthly/Annually	
Financial performance Monthly	Annually	-	Weekly/Monthly/Annually	
Social issues	-	-	Monthly	-
Productivity Annually	-	-	Monthly/Annually	
Innovation	Annually	Annually	Annually	-
Employee development	Annually	Annually	Quarterly	-

As can be seen from table 6.10, high performance organisations generally review more frequently than low performance organisations. Information obtained from the reviews are fed back to the systems and corrective actions are taken to bring substandard performance up to standard. The case studies also revealed that performance factors such as flexibility, social issues and productivity are not reviewed in many organisations. These

are intangible factors that are difficult to quantify, and the survey supports this finding. Much has been written about these practices by many authors in the field of performance measurement. One of the attributes of measurement is to have a relevant measure despite its intangibility. As long as it is critical and relevant, management have to find ways to quantify the factors so that a true picture of the organisation can be seen. The reason that low performance organisations fail to perform is because measures are not comprehensive and are distorted in nature. As Kaydos (1998) pointed out, it is like flying a plane with faulty speedometer.

Table 6.11 shows that the most common measures used in the case study organisations are delivery performance, quality performance and financial performance. Financial performance is preferred over other measures in the private sector. These measures are part of organisational constraint that the private sector is looking into. The public sector is not too concerned about finances, since it is centralised at the Treasury level, and they review financial performance on a yearly basis, and only to check that budget is not exceeded by expenditure. The least used dimensions of performance are flexibility and social issues. Most organisations prefer to review their performance annually and monthly. However, private organisations have more frequent reviews than public organisations.

The researcher observed during the fieldwork that not all organisations are aware of measurement. Many people, especially in low performance organisations, are unaware of its existence. This is the reason why deployment strategy needs to be formulated, so that people put

measurement into practice. This is supported in the survey where 'people involvement in the measurement system' was picked as the priority of a good systems.

TABLE 6.10 FREQUENCY OF FORMAL PERFORMANCE MEASUREMENT BY DIMENSIONS

Case	DP	CS	PT	FF	QP	FP	SI	PP	IP	ED
TOTAL										
A	B 7	B	A	-	M	A	-	-	A	A
B	A 6	-	-	-	M	A	-	A	A	A
C	M 10	Q	W	Q	W	W	M	M	M	M
D	D 4	W	-	-	Q	M	-	-	-	-
Cases	4	3	2	1	4	3	1	2	3	3
Freq										
D	1	0	0	0	0	0	0	0	0	0
W	0	1	1	0	1	1	0	0	0	0
M	1	0	0	0	2	1	1	1	1	1
Q	0	1	0	1	1	0	0	0	0	0
B	1	1	0	0	0	0	0	0	0	0
A	1	0	1	0	0	2	0	1	2	2

Key to responses:

D-daily	Q-quarterly
W-weekly	B-biannually
M-monthly	A- Annually

DP – delivery performance	CS – customer satisfaction
PT – process time	FF – flexibility factors
QP – quality performance	FP – financial performance
SI – social issues	PP – productivity performance
IP – innovation performance	ED – employee development

An effective measurement system should be designed to incorporate information as a normal part of the system feedback and controls (loop) in place to react to negative and positive deviations from a set point. This can be seen from high performance organisations (A and C). These organisations

make systematic use of information in every way possible in their decision making processes.

6.3.4.2 Continuous Improvements

Performance measurement is useful as an integral part of the overall management system. This is particularly so if performance fails to meet its target. The organisation then seeks a solution to rectify any variances identified in the processes by developing an action plan. In the short term, it attempts to improve performance at the operational level (local level). If however, process owners are not able to localise the problem, then it is brought to the attention of top management, as some problems consume more resources. The aim is to attempt to improve performance as soon as possible before it impacts onperformance at the higher level.

Continuous improvement initiatives can be formed easily if there is a structured quality programme within the organisation. This structure will enable managers or process owners to look at continuous improvement efforts in guiding managers to prioritise performance objectives and choose how area resources are best allocated. High performance organisations possess such an approach while low performance organisations have a less defined continuous improvement approach.

In both high performance organisations in this case study, if performance fails to meet its target, corrective action is taken immediately. However, in the low performance organisations, it will be brought to the attention of top management for further action, and the top management will decide on the course of action to be

taken. If intervention is delayed, the problems will be aggravated and it may be too late to rectify the situation.

In managing the process, not all organisations in the case studies use patient survey to identify organisational requirements. Some organisations use a range of "surrogate" measures to identify factors that impact performance, for example, patient complaints are used as a feedback mechanism in some organisations and thus are a leading indicator for some measures. The information received from a survey of patients or employees is commonly reviewed at the highest levels (Hospitals A and C). This is so because top management views customer satisfaction as one of the critical success factors in the organisations. Low performance organisations do not consider this.

6.3.5 CONCLUSION

Cross-case analysis confirms the findings from within-case analysis, thus allowing a more general conclusion to be drawn from the data. A generalised view of the case study data suggests that there are differences between high and low performance organisations (schematic view of differential concept).

High performance organisations appear to achieve clarity and structure of their measurement within the organisation, whereas low performance organisations have structural problems in identifying measurement system. The model explicated from these case studies will be explained further in the next chapter.

6.4 SUMMARY

The purpose of this chapter is to explicate the framework via case studies. The cases are analysed by superimposing structure into them, ie within-case and cross-case, as suggested by Eisendhart (1989). From the case study analysis, it suggested that performance measurement was found to be successful where all three of the components (ie strategy formulation and deployment, internal control systems, and managing processes) are clearly identifiable and interlinked so as to be mutually supportive.

It is also found that there is a difference in the practice of performance measurement systems between high and low performing organisations. Hospitals A and C are rated top performers due to their ability to integrate the three components of the organisations successfully. This supports the finding that the three must coexist in order for the system to work effectively.

Once performance measurement systems have been developed, managing change is inevitable. The change process will be easily manoeuvred if there is a formal procedure or structure that promotes the change process. It is found that structure makes performance measurement more easily communicated and implemented, as can be seen in Hospital A, B and C. As for Hospital C, there is no formal procedure for performance measurement, as it is a private organization: however there appears to be a basic 'skeleton' of indicators collected by various departments, in order to promote flexibility in measurement. Without proper measurement systems integrated into the mainstream, organisations are handicapped

in a lot of ways, an example being Hospital D in the thesis. Chapter Seven explores the framework that emerges from the case studies

CHAPTER 7
FRAMEWORK DEVELOPMENT

7.1 INTRODUCTION

This chapter synthesise the result from the empirical research in which a framework is developed. The development of the framework from multiple case studies will be discussed in further details. It is the researcher believes that the empirical framework developed will help to explain the complexities in organisation in terms of measuring performance. The detail will be explained in section 7.2. Next the research introduces the idea of future challenges of Malaysian Healthcare Services. This is crucial as it sets the scene (context) for performance measurement systems to work effectively in a Malaysian environment.

7.2 PROPOSED FRAMEWORK FOR PERFORMANCE MEASUREMENT SYSTEMS IN HEALTHCARE SERVICES IN MALAYSIA.

Figure 7.1 provides a schematic view of the framework that emerges from the case studies and survey done in Malaysia. This section is dedicated to explaining the framework and understanding the underlying concept of performance measurement in healthcare services.

The framework is divided into three parts, ie. Strategy formulation and deployment, Internal control system and Managing processes. Strategy formulation activities can be seen at the organisational level. Internal control can be seen at the departmental level, which is also known as the process-based level. Managing

process can be seen at the operational level, where activities are actually performed and fed back to the system, in order to manage the process consistently. This framework will be explained in the next section.

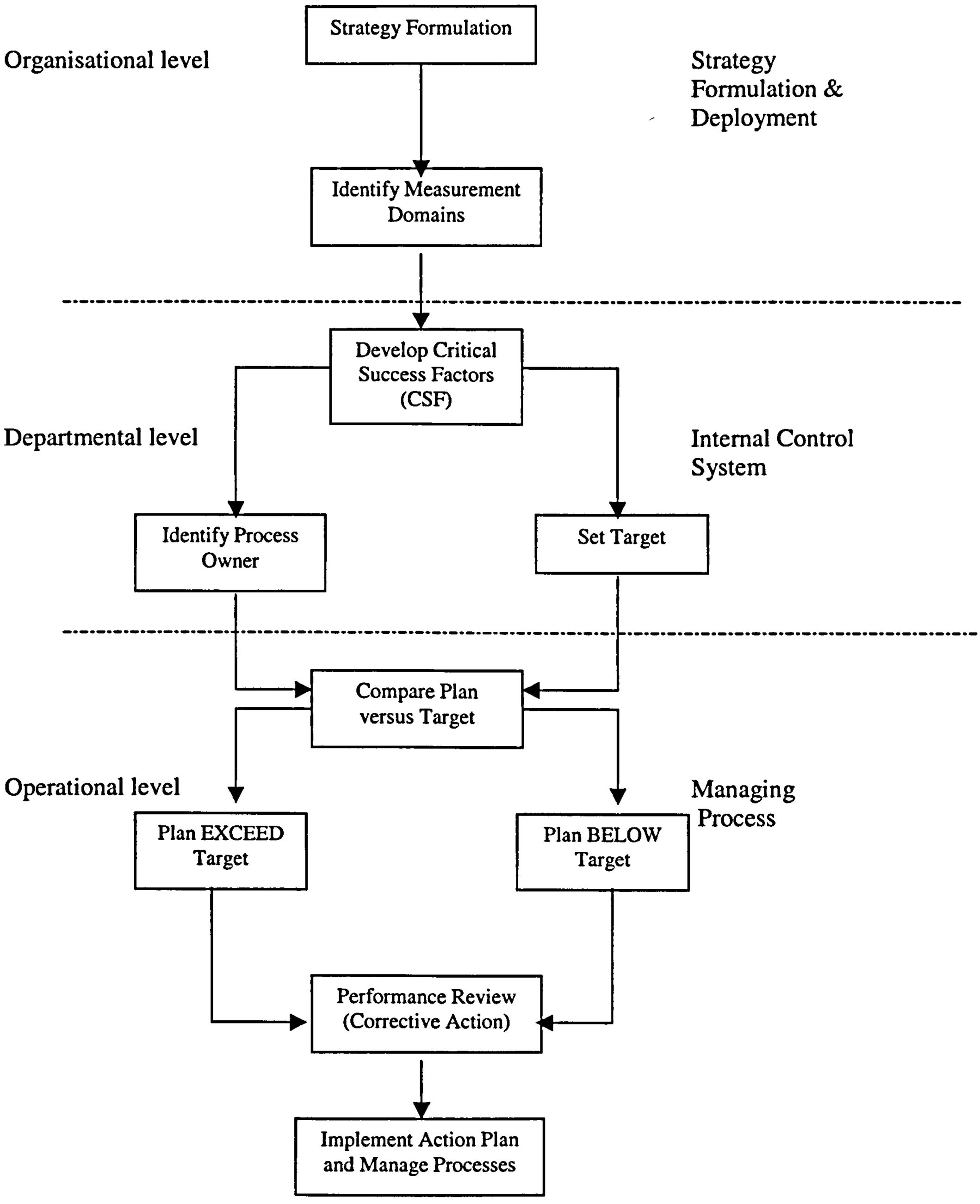


FIGURE 7.1 PERFORMANCE MEASUREMENT IN HEALTHCARE FRAMEWORK

7.2.1 ORGANISATIONAL LEVEL

Performance measurement systems start at the organisational level where top management formulate strategy and deploy it to the lower level for implementation purposes. This can be seen from figures 6.2, 6.4, 6.5 and 6.7 where organisations formulate their vision, mission, objective and strategy to be deployed by the lower hierarchy of the organisation. Details of the formulation have been discussed in depth in Chapter Six of the thesis.

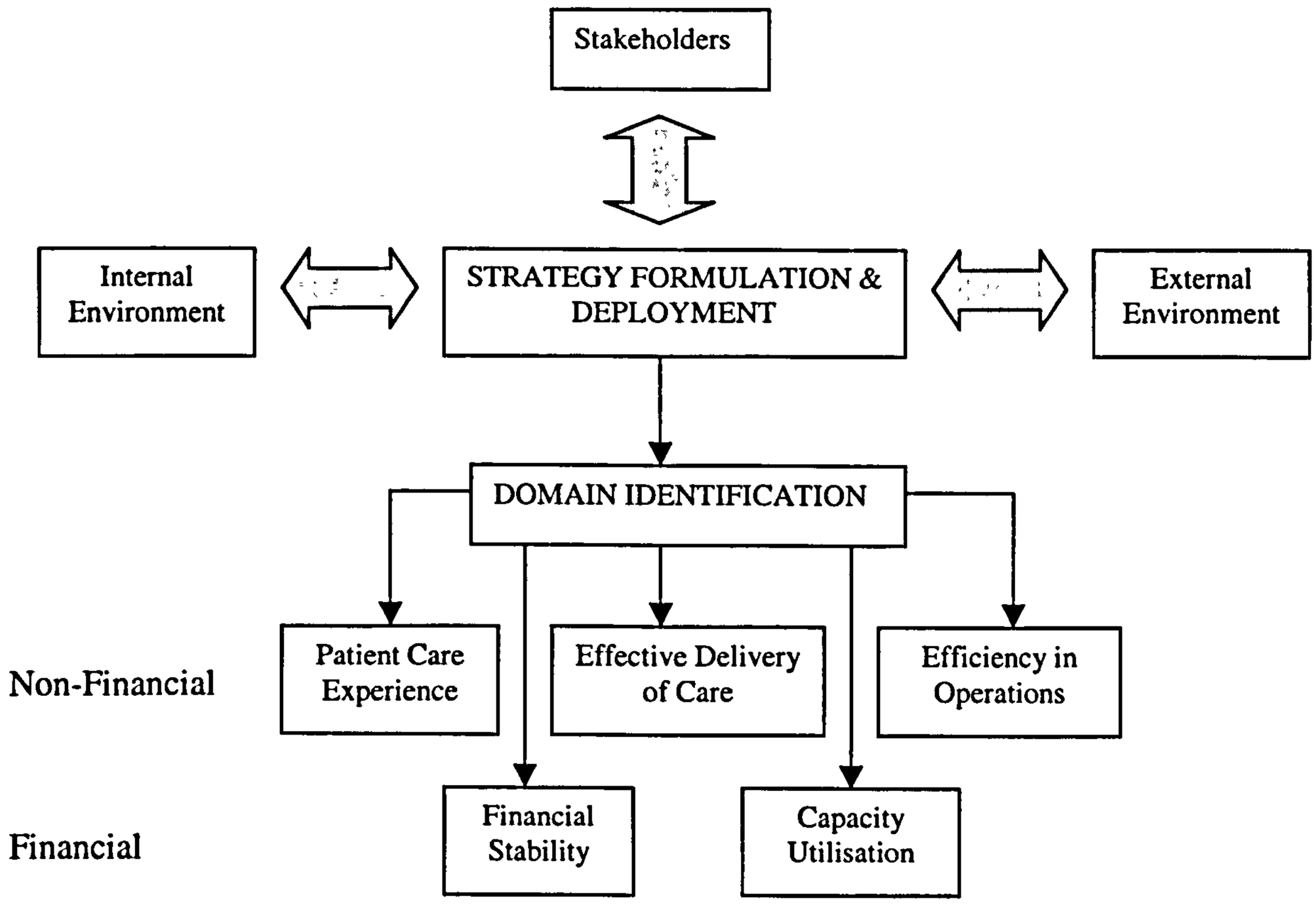


FIGURE 7.2 STRATEGY FORMULATION AND DEPLOYMENT

Steps in the strategy formulation and deployment process are:

- Organisations develop a vision and translate it to a mission statement. The mission statement takes the views of stakeholders (patients, employees,

government etc). The mission statement serves as a guide for organisational journey making. Once developed, the mission should be constant.

- Based on the mission, top management then identify the measurement domain that they desire to improve. The researcher proposes a 'balance scorecard' technique to identify domains. These domains are balanced in the sense of financial and non-financial measures. The choice of domains (how and why researcher chose the domains) has been discussed in detail in Chapter Two.

The strategy formulation and deployment approach is similar to the Japanese art of Honshi Kari (closest translation: catchball process). By definition (Tennant and Roberts 2001), a deployment process attempts to integrate top management goals into daily operations. This approach was adapted by Westerners such as Rockart (1979) and Oakland (1993).

7.2.2 DEPARTMENTAL LEVEL

Once the measurement domain is identified at the organisational level, the next step is to develop critical success factors at the departmental level. Some organisations develop their own terminology, such as key performance indicators, key results areas, etc. The critical success factor approach was coined by Rockart (1979). It was then supported by many authors such as Kaplan and Norton (1993), Geanuracos and Meiklejohn (1993), Meisel (1992), Oakland (1993) and many others.

This has been discussed extensively in the literature. The CSF along with responsibility are cascaded down to the departmental level (also known as process level). From the case studies, it can be seen that the strategy deployment process, that is top-bottom approach, is combined with a bottom-up approach to derive a comprehensive (balanced) measure. As such the process is nearer to the quality policy deployment (QPD) approach, suggested by Zairi (1994) and Oakland (1993). It is at the process level that the greatest difference can be seen between high and low performance. The process level is enhanced by the quality systems that exist concurrently with measurement systems in which they form a comprehensive system of internal control. This can be seen from the following table explicated from sections 6.2.1.3, 6.2.2.3, 6.2.3.3 and 6.2.4.3.

TABLE 7.5 INTERNAL CONTROL SYSTEMS

	Quality system	Structure	Review
A	MSQH ISO 9002	Quality assurance committee League table	formal & frequent
B	ISO 9000 (in the process)	no formal structure	not formal schedule review
C	ISO 9000 (in the process)	ad hoc taskforce	formal & frequent
D	nil	CEO initiatives League table	not formal schedule review

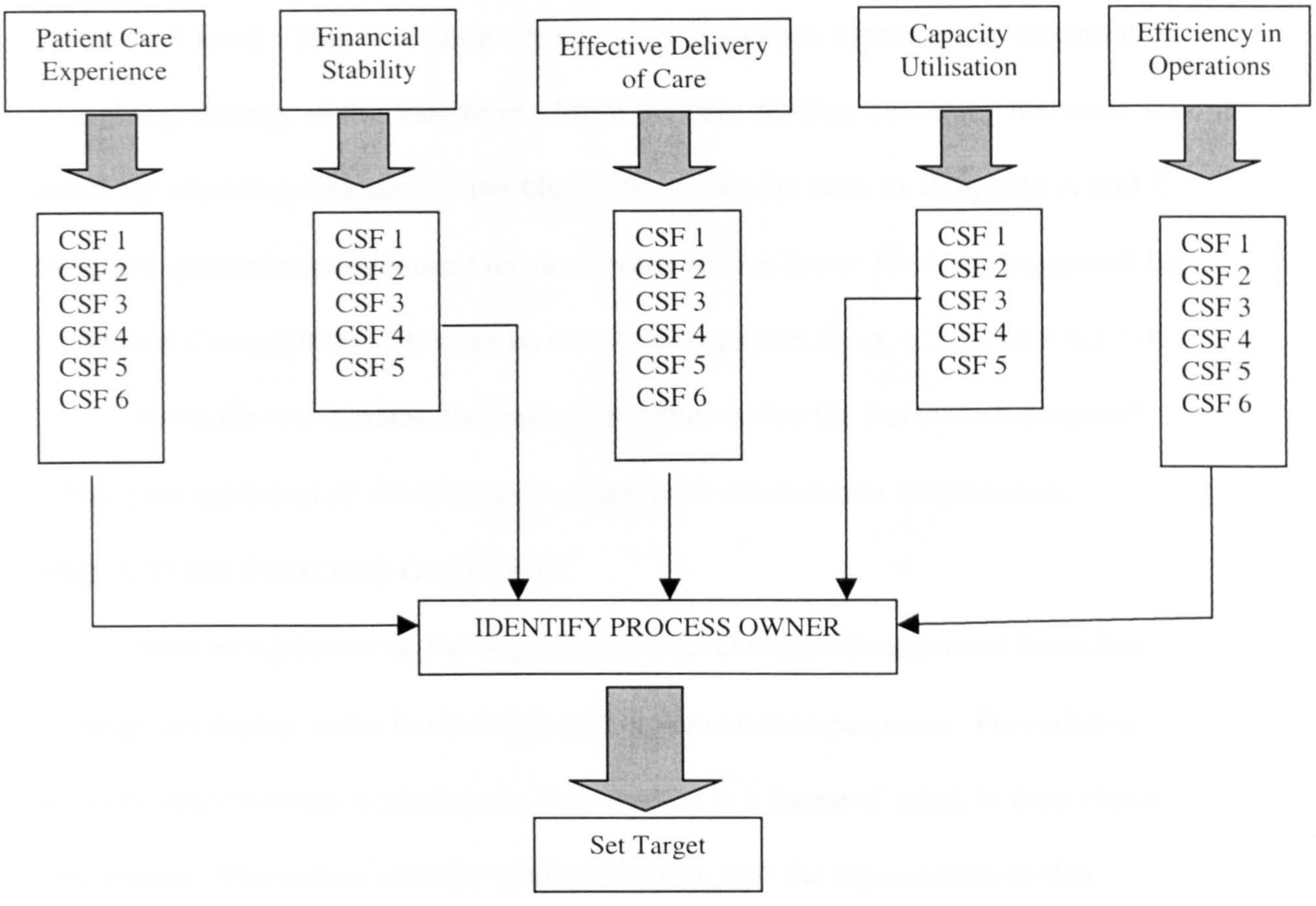


FIGURE 7.2 INTERNAL CONTROL SYSTEM

7.2.3 OPERATIONAL LEVEL

Once targets have been set, the next step is to compare the plan with the target. This is done via benchmarking, either internal or external. In the case studies, all the hospitals benchmark their performance on a yearly basis. However, only Hospitals A and C benchmarked externally, that is using international standards.

It is vital that performance measurement is integrated into the overall management system. The model developed above assumes an integrated approach. It does not exist as a distinct entity of its own. Analysis of the cases suggests that this is also done in a practical sense. For example, mission at the organisational level will become objectives at the departmental level, and later become strategy at the

operational level. This cascading activity is an important aspect of the organisation in creating synergy in the long term. From the case studies, cascading activities are eased by imposing structure to the hierarchy, as can be seen in Hospitals A and C. Structure promotes communication downward to the lower level, as suggested by Lynch and Cross (1993). This can be seen from section 6.2.1.4, 6.2.2.4 and 6.2.3.4.

From the case studies, the researcher believes that the framework proposed follows the attributes of the Donabedian approach discussed in the literature: STRUCTURE-PROCESS-OUTCOME.

Structure presents at the organisational level where management formulate strategy and deploy to the lower levels for implementation purposes. Formulating mission, objectives etc is placing the organisation in a frame of mind, ie from chaos into system. This means actually putting structure into the organisation so that organisational resources will be utilised effectively and efficiently. Process can be seen at the departmental level where process owners identify critical factors to measure. This is a crucial stage in which these factors determine organisational outcomes. It is also called internal control because it serves as a guideline or boundaries for managers to act on measures. Outcome, on the other hand, can be seen at the operational level where benchmarking (comparison) activities take place. This is where feedback from these activities becomes the input for the next process. These processes have to be managed in order to get full benefit of the system.

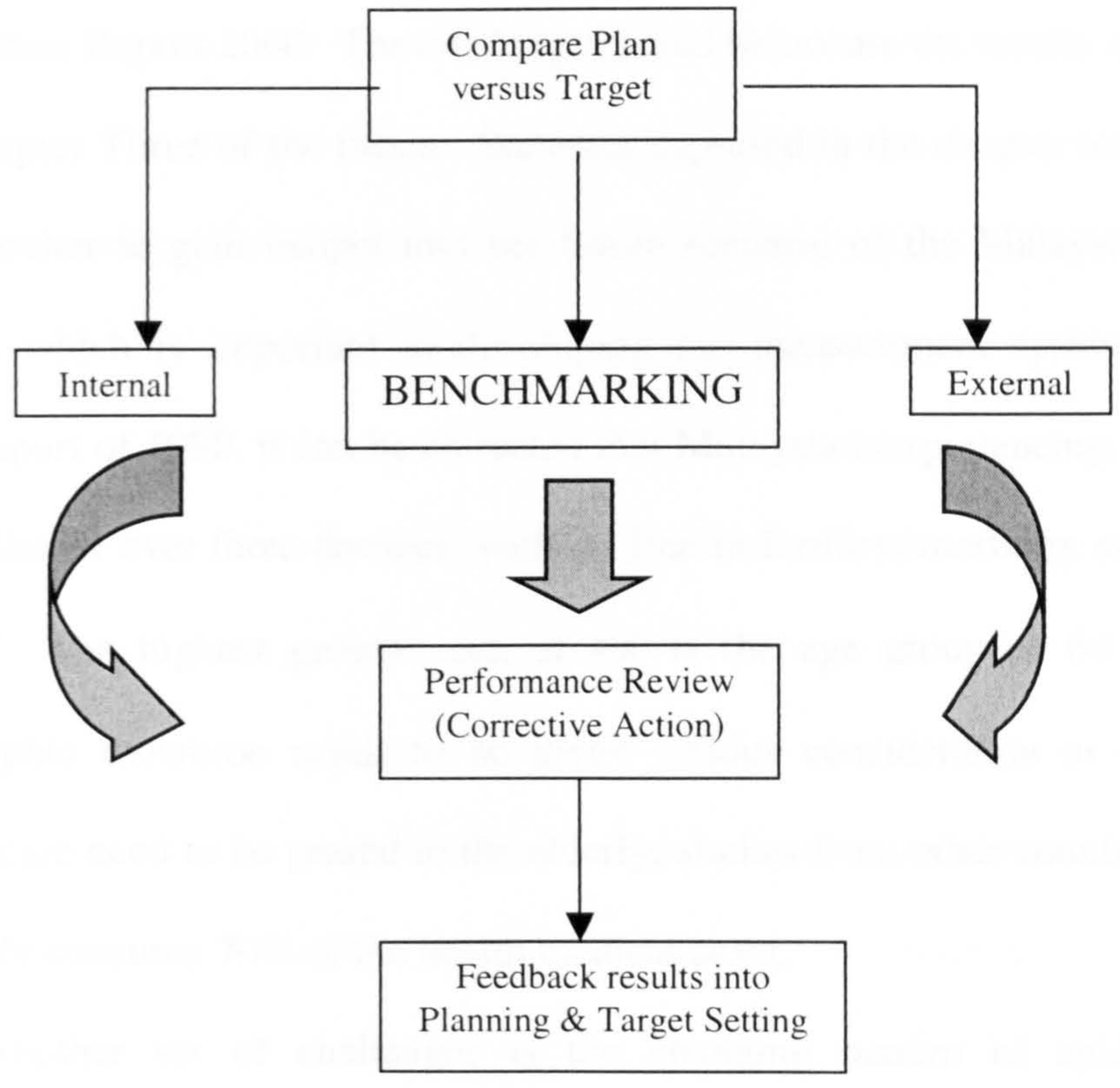


FIGURE 7.3 MANGING PROCESSES

7.3 FUTURE CHALLENGES OF MALAYSIAN HEALTHCARE SERVICES

This section aims to explore future challenges of healthcare provision in Malaysia. This section is put at the end of the thesis so as to gain a better understanding of the journey that lies ahead. In order to put performance measurement systems in perspective understanding what lies ahead is important. The Malaysian healthcare industry is growing and performance managers need to understand barriers and constraints to implementing performance measurement systems. There are many agendas of healthcare in Malaysia that are not met. This is a typical scenario in developing nations throughout the world, doing more things with less resources. These phenomena has been highlighted in the World Health

Organisation Report 2000. The challenges listed below are the results of an analysis from Chapter Three of the thesis. Statistics captured in the chapter are analysed by the researcher to gain insight into the future scenario of the Malaysian healthcare industry, which is important in developing the measurement system. From the annual report of 1998, it can be extracted that Malaysia isexperiencing, "maturing of the population over three decades, with decline in fertility, mortality and population growth." The highest growth rate, at 4% is the age group of 64 years. This demographic transition needs to be given serious consideration as facilities and medical care need to be geared to the elderly; studies from other countries show that the elderly consume 70% of the health medical costs.

Another set of challenges is the changing pattern of epidemiology in Malaysia. It is observed that some of re-emerging infectious diseases have appeared in some states in Malaysia. These tropical diseases such as malaria and dengue fever are prevalent in the rural community, as 60% of the population lives in rural and poverty stricken areas. There is a need to gear healthcare services to communities, delivering healthcare to the doorstep of these underprivileged people. Moreover, the rise of sexually transmitted diseases such as viral hepatitis, HIV and AIDS has prompted the government to concentrate more on the preventive rather than curative medicine.

Many studies in healthcare have shown that income distribution plays a major role in determining nations' health status (World Bank Report 1992). Economic changes have an impact on resource allocation for the healthcare sector. Managers need to understanding this implication for measurement systems as resources become scarce at a time of economic decline.

Healthcare is further challenged by the socio-economic status of the population. As this factor improves over time, the population has a "tendency towards sedentarism, changes in dietary habits, smoking, alcohol and drug usage. These are among the multifactorial causes of lifestyle diseases" (Malaysia Health 1997).

The future challenge of healthcare also lies in political considerations. To meet the increasing demand and expectation of consumers the government is looking for new ways of financing the health systems. This will change the mechanics of the health systems as more resources will get into the systems and be used effectively to service the population. Another ways is to persuade or encourage the private sector to play a greater role in healthcare delivery, as the private sector encompasses 20% of the market share in the healthcare industry.

Technological development also prompts managers to look at healthcare from a different perspective. The latest technology in medicine has put pressure on physician to learn new procedures such as surgical laparoscopy for cardiac imaging and endoscopy that will replace invasive procedure for cardiac-thoracic surgeons, at much less cost. Moreover, the government's mega-project in Multimedia Supercorridor (MSC) has put telemedicine next on the health agenda. This project is important as an enabler to realise Health Vision towards developing an information-rich society. Information Technology (IT) has revolutionised the way medicine is being practised. "Paperless hospitals" is in its pilot stage at the moment. IT has made hospitals virtual and boundaryless.

Tan Sri Dato' Dr Abu Bakar Sulaiman, Director-General of Health, Malaysia strongly argues that,

"reforms of healthcare system should include both organisational and financial aspects. From the organisational perspective, health planning and management systems need to be designed so that they become ***outcome oriented, focus on reducing health hazards, provide cost effective interventions and are capable of providing long term solutions that favour health promotion and prevention.***"

7.4 SUMMARY

A framework was developed via case studies. This empirical framework is based on the Malaysian healthcare industry. It sought to explore the concepts of strategy formulation and deployment, internal control systems, and managing processes.

The framework attempts to ensure that measurement is not treated as aseparate system, but as part of an integrated approach within the organisation, thereby maintaining the link between strategies, actions, and measures (Dixon et al, 1990). It is the researcher's hope that the performance measurement system framework, together with critical factors, will enable managers to develop a truly effective performance measurement system for their organisation.

CHAPTER 8
CONCLUSION AND RECOMMENDATION

8.1 INTRODUCTION

The research presented in this thesis represents an exploratory study of performance measurement systems in healthcare services in Malaysia. The purpose of this chapter is to discuss the research findings, place the findings in the application of the context, and to suggest some directions for future research. This chapter is about identifying organisational components of performance, not their measures. This will conclude and sum up the research in the area of performance measurement systems.

The chapter is composed of four sections: key findings; new research directions; research questions and critical reflections of the study. The section on key findings discusses conclusions derived from the case studies and survey. Detailed discussion of the findings is found in Chapters Five and Six. These are conclusions that support the development of the proposed framework that emerges from the fieldwork done in Malaysia, which is discussed in the next section.

In the next section (8.3) then, research directions can be charted. The research directions are set based on the current scenario of future challenges. The next section (8.4) is devoted to answering research questions posed at the beginning of the study and the last section (8.5), the researcher will critical reflect on the study.

8.2 KEY FINDINGS

This section explicates key findings from the study, including case studies and survey. First the researcher introduces the development of a performance measurement framework, in which case studies provides the mechanics for the emergence of the framework. The case studies are reported first in section 8.2.1 because they highlight the researcher's investigation in explicating the phenomenon in multiple cases. Moreover, section 8.2.2 supports the researcher's findings through survey analysis. Details of the survey and case studies are found in Chapters Five and Six respectively. The key findings are followed by the case studies instead of a survey because they support the development of the framework, while the survey supports the characteristics and nature (background) in which the framework operates, i.e. the contextual aspects of performance measurement.

The key findings of the research enable the development of a performance measurement framework that will be proposed in the later section. The framework consists of three major components: strategy formulation and deployment, internal control systems and managing processes in the organisation. This framework represents an amalgamation of approaches used in organisations with a formal structure of performance measurement systems. This framework is the result of empirical investigation done in Malaysia. In developing the framework, care was taken to avoid the use of a prescriptive set of measures. This has been proved ineffective, since the state of the economy ensures that any set of measures will stay relevant only for a short period of time. Many authors in the field support the researcher's views.

The framework of a performance measurement system should not be treated as an isolated system. In high performing organisations, measurement is documented at all levels and successfully communicated across the organisation. If this is not done systematically, investigating performance within the organisation is a difficult task. The researcher encountered this experience in a low performing organisation. Putting a structure of performance measurement into the organisation is a prerequisite for success. Making performance measurement formal will be simplified if activities within the organisation are co-ordinated. This is widely supported in the survey as well as the case studies. The case studies show that as long as structure is intact, even if performance measurement is not formal, it helps to co-ordinate quality activities across the organisation. This can be seen in Hospital C (structure intact, but PMS is not formalised) which yields a good outcome.

The structural differences in performance measurement systems in both sectors of the economy is mainly due to differences in processes. The private sector has a more stable and established performance measurement because they have to survive in harsh conditions in order to materialise profit over time. They therefore attempt to get it right by trial and errors and a result they produce more innovative measures. The researcher believes that performance measurement is part of the natural evolution of the organisations if they wish to compete in the twenty-first century environment. This can be seen in Chapter Three of the thesis where the Malaysian healthcare system is put to a stand.

8.2.1 Findings from the Case Studies

From the case studies conducted there are significant differences in practising performance measurement in both sectors. In the researcher's view, the private organisations are more defined and focused in formulating strategy and stating the purpose of measuring performance, while the public organisations did define their strategy but with less clarity and purpose. This is highlighted in the performance measurement literature, in which the public sector's purpose for performance measurement is to strengthen accountability, whereas in the private sector it is driven by profitability. These differences lead to different approaches in the three elements of performance measurement.

The importance of continuous improvement has driven organisations to recognise a systematic view of performance measurement. The impact of measurement in the organisation includes focus on patient needs (***structure***), care pathways (***process***) and health ***outcome***. This will assist organisations, public and private, to identify drivers and enablers of performance measurement so that organisations can manage processes effectively.

All the case study organisations were found to have a range of other networks of systems working within the organisations. There are budgetary control systems, quality award systems and a number of quality systems running simultaneously with performance measurement systems. All these systems are fully documented in the organisations. The integration of measurement systems with other quality systems is important to the successful use of performance measurement, as it eases the implementation of measurement systems across organisations.

The researcher also identified several factors that nurture the use of performance measurement in the organisations. These are critical factors that stimulate the efforts to make use of performance measurement in a more systematic way. These factors include top management commitment to measure non-financial aspects of the organisations. This is evident in the survey where both sectors share the same view. In addition people should be involved in the development of performance measures and have a systems 'fix' within the organisation. On the other hand, factors that inhibit performance measurement are lack of process understanding, no feedback of performance and the inheriting of a system (inertia). These factors are similar for both sectors. Knowledge of these factors is of importance to practitioners wishing to develop their performance measurement systems or fine tune the existing system. With the knowledge of the population (healthcare industry), practitioners can get the full benefit from it so that it will maximise the impact of their attempts to develop the systems.

The researcher asked interviewees about perception of performance measurement within their organisations. This was to highlight the actual characteristics of performance information within the case study organisations. The following are responses received from the interviews:

1. Performance measurement should be valid and accurate. Moreover, interviewees acknowledge that organisations did not audit or verify the above facts.

2. Performance measurement should be able to be compared across hospitals in Malaysia. The existence of the National Indicator Appoach and the Hospital Specific Approach implemented at the Ministry level are acknowledged. However, it is noted that these indicators are not supposed to be 'cast in stone' and they are not comprehensive in nature. The Ministry has to select performance indicators based on the current needs or situation to be compared to all hospitals.

3. Performance measurement should be made accessible, data should be easily captured and quantifiable.

4. The organisation, specifically process owners, lacked of education on the proper use of performance measurement. Training is critical in order to educate the employees in the healthcare sectors to understand performance measurement systems, as measurement systems are relatively new in Malaysia.

Regarding the future expectation of performance measurement systems in Malaysia, the researcher found that high performance organisations (Hospitals A and C) responded positively in terms of expanded role and growth in the usage of the system, while the low performance organisations (Hospitals B and D) are sceptical about its use in the future in terms of abuse of the system and bureaucracy concerns.

8.2.2 Findings from Survey

The following are findings derived from the survey conducted on healthcare services. The details of it have been discussed in depth previously. This section highlights only key findings from the survey.

1. 85% of the hospitals in Malaysia have implemented performance measurement systems. However, the usage of the system is not equal, 52 out of 57 (91%) are public sector and 20 out 29 (69%) are private. The majority are from the public sector because of the reporting system that the Ministry has imposed. Performance measurement is part of the government initiative to improve public hospital performance. The audit procedure has been explained in Chapter Three of the thesis. The survey also revealed that of the 85% that implemented the system 77% are not satisfied with their performance. Indeed, Neely et al (2001) argue that measuring the wrong things is pervasive in Malaysia. Only 23% are supportive of the system with an equal percentage distributed between public and private organisations. Perhaps it is time to examine the nature of performance measurement systems in the healthcare industry and give a new insight into the systems. These findings are similar to the Business Intelligence survey done in the UK by Geanuracos and Meiklejohn in 1993, revealing that 88% of respondents surveyed were dissatisfied with their current measurement systems. This shows that more research needs to be done to develop a more effective performance measurement system.

2. The survey also revealed that the healthcare industry in Malaysia suffers 'myopic views' of management. Myopia is a term for 'short sightedness'. It can be seen that both sectors are overemphasising employee productivity and under-emphasising innovation in their respective organisations. This give the organisations an indication as to what extent the organisations are collecting quality information. The organisations should engage in more strategic activities to scan for strength and weaknesses. A shift in views is in order. There are many aspects of hospital management that managers could address, issues like quality of services, patient satisfaction, clinical and non-clinical pathways and many others. This identification of gaps helps managers to focus on areas that are too much or too little emphasised within the organisations. The identification of gaps within a model/system allows the user to align processes and enable a vigorous pursuit of corrective measures. This coincides with Schmenner's article, "Gaps, Suspects and False Alarms"

There are many authors that favour the use of gaps to identify problems in the systems (Parasuraman et al, Dixon et al, Aramatunga et al and many others). Newman et al (1998) pointed out, "conceptual gap models have proved to be of considerable practical use in the industry, and particularly for managing the effective delivery of services."

3. Table 5.28 revealed domain specific achievements so far in the healthcare industry. The industry was assessed by its domain accomplishment (achievement) of more than 70% (based on academics' and practitioners'

views). The public and private sectors' scores are aggregated to 100%. The results of this aggregation are reported in table 8.1.

TABLE 8.1 HEALTHCARE INDUSTRY PERFORMANCE

Capacity utilisation:	70.0%
Effective delivery of care:	41.7
Patient care experience:	41.0
Efficiency in operations:	30.0
Financial stability:	8.4

All domains are below 50% except capacity utilisation. Details of the industry performance have been extensively discussed in Chapter Five of the thesis.

4. As can be seen above, there is much room for improvement in the healthcare industry. Malaysia, as a developing country, has no problem with organisational capacity. The industry, with a total of 300 healthcare facilities servicing 23 million people, is faced with an under-capacity problem (ie overcrowding). The quality of care issues get the attention of the media. This can be seen in the prevalent reports of gross negligence by physicians, nursing, and many other unpleasant experiences. Even developed countries are not exempt from quality of care issues, and healthcare researchers are still busily looking for answers.

The survey also revealed that the healthcare industry in Malaysia faces problems in controlling costs over the long run. Healthcare costs are rising steadily despite government intervention to contain them. This is also common in many developed countries like the United States and United

Kingdom. It is expensive to finance healthcare for the population. The government in its objective to provide healthcare for all is also trying to find innovative ways to finance the cost. This is a challenge for the Malaysian healthcare industry as it will change the way we do things. These issues have been discussed in Chapter Three of the thesis.

5 The researcher believes that in order for performance measurement systems to work effectively, the environment in which they exist needs to be identified. This in turn will help nurture the process. The survey reveals that obstacles to performance measurement in the healthcare services are shortage of specialists in the area, and lack of time to explore the data and interpret the results. This raises concerns as to how performance measurement systems are to be managed. This knowledge is useful for practitioners in designing the systems to accommodate the dynamics of their organisations. Moreover, the reason for implementing the systems is also equally important to the practitioners concerned. Table 5.54 demonstrates sectorial differences in implementing measurement systems. The following are the three most important reasons:

TABLE 8.2 OBSTACLES IN PMS

PUBLIC	PRIVATE
Identify problem area	Cost control
Planning	Identify problem area
Target setting	Service quality issues

6. Tables 5.58 and 5.59 demonstrate factors that inhibit and facilitate performance measurement systems. This is helpful for the system design to

enhance understanding of quality design. Factors that facilitate measurement systems are top management commitment, having a system of measurement, and involving people in the measurement. This is crucial element of measurement systems, as the people who used the systems have first-hand experience. The inhibitors of measurement systems are lack of process understanding, inherited systems (inertia) and no feedback of performance. With this point in mind, it is hoped that a more compabtible system will be designed to accommodate the organisational information needs in order to implement performance measurement systems effectively.

7. At the end of the survey, respondents were asked about their position in relation to their competitors in the industry. The following are the results, on a scale of 1 = worst off to 7 = better off :

TABLE 8.3 INDUSTRY COMPETITIVE POSITION

Aspects	Industry
Services	3.85
Technology	3.20
Treatment	3.80
Quality	3.80

The results above demonstrate the directors' realistic views of the healthcare issues in Malaysia in terms of services, technology, treatment and quality. The healthcare industry is still in its infancy. This is well understood in public organisations as the Director-General of Health pointed out in his inaugural speech in Kuala Lumpur. There are many issues unresolved in the healthcare industry. Players in the industry understand very well the implications of managing organisations effectively. All the respondents rate

themselves between 3 and 5, as respondents (directors) have realistic expectations of the industry.

8. At the end of the survey, respondents were asked about the hospitals of the future, and what characteristics of hospitals they favour. This is a form of 'delphi technique' used to corroborate the survey with subjective information. It is most useful if there is no structure in responses perceived by the respondent. From years of experience in the healthcare industry, based on the survey responses, the following are healthcare experts' opinions of the hospitals of the future in narrative form, in which is a journey yet to be travelled by the Malaysian healthcare system.

TABLE 8.4 MALAYSIA'S FUTURE HEALTHCARE (DELPHI METHOD)

"The future hospital will have excellence in service. This means no complaints from patients, no waiting time for outpatients as well inpatients. Physician follows procedures from peri-operative to post-operatives surgery. Patients are satisfied with all dimension of services, from counter to ward treatment. If this is implemented accordingly, the hospital will achieve a patient centred standard that has been set by the health authority. Moreover, the respondent favours integrated system of healthcare, from billing up to discharge of patient. Information technology will be the enabler for the systems.

Medical technology is crucial in determining efficiency of operations as this will bring down the cost of healthcare over the long run. Examples of medical technology are the usage of laparoscopy and endoscopy. This will substitute invasive procedures in the operating theatre which give tremendous benefit for patient (mortality and morbidity) as well as administrators (speed and cost).

Community medicine is going to be an important aspects of healthcare in Malaysia. It will be incorporated formally in the hospital organisational structure. This is a promise to provide healthcare to everyone (an equity issue), a vision set by Ministry of Health. Community medicine is giving social and preventive medicine to the population, and will hopefully reduce the number of patients attending the hospital and cut the of length of stay. This gives access/opportunity for the facilities to provide better services to patients who really need hospitalisation."

8.3 NEW RESEARCH DIRECTIONS

8.3.1 Definition of Terminology

There is a need to define the terminology in the field of performance measurement. This has been discussed in Chapter Two of the thesis. The literature reveals that authors from various disciplines have used the terms for different purposes and contexts, thereby giving rise to a broad definition of performance measurement in the field. Further research is needed to clarify the definition used, from academics as well as practitioners in the field of psychology, behavioural, human resource management, production & operation management, strategic management, accounting and other associated functional areas. Input from these areas will benefit members of the community in terms of providing definitions and broad acceptance of those definitions.

8.3.2 Longitudinal Research

This research is a 'snapshot' of performance measurement systems used in Malaysian organisations. The development of the systems over time is based on many confounding factors. Factors such as current scenarios in Malaysian politics, economy, culture and many other things have an impact on the system being developed over time. The development of performance measurement systems is a dynamic process as postulated by Bititci (1999). There is a need to document changes in performance measurement over time so that better understanding is gained through these changes.

8.3.3 Technology Usage

From the case study organisations, the researcher found that the use of information technology has a great impact on performance measurement. This can be clearly seen in Hospital C which has a mainframe to accommodate its information needs and a distributed database to assist managers in their search for poor performance, thereby making them more aware of performance below par. Moreover, the advent of information technology makes daily reporting possible. This can be seen in Hospital A. An integrated system also allows timesharing computing to be done across organisations. The researcher believes the area of decision support systems could be an important area to look into as healthcare organisations in Malaysia in particular have not developed this area yet. This would cut down the processing time of many managers within the organisations.

The study also found that medical technology is expanding rapidly in the medical professions. The application of more sophisticated equipment will lower the cost of service to the patients, and the technology will revolutionise the healthcare industry in the future. This will mean that physicians can spend more time with patients and improve quality of service at the same time.

There is a need to look at the impact of technology on performance measurement. Information and medical technology will change the way healthcare organisations practise medicine in the future.

8.3.4. Relationship in Performance Measurement

From the literature discussed in Chapter Two, the researcher believes that the relationship in performance measurement is not well understood. This is supported by many authors in the field, such as Neely, A, Nanni, E, Goold et al and etc.

The case study organisations reveal that there are other systems present concurrently with performance systems. They coexist in the same environment, in a symbiotic relationship. There is a need to examine the relationship between the systems. This in turn will help to understand the management of operations more precisely. Many other systems exist within an organisation, formal and informal. The research must look into informal systems as these too have direct/indirect effects on performance measurement. This is supported by Euske et al (1993) in terms of looking at organisations in an organic way and not a mechanistic way.

8.4 RESEARCH QUESTIONS REVISITED

The research questions were posed at the beginning of the study to navigate the research at the design stage. This section is intended to answer the questions based on the studies. The researcher has three interacting questions about performance measurement. They are:

1. How is performance being measured in Malaysian hospitals?
2. What is being measured?
3. Why is it measured that way?

8.4.1 The 'HOW' Question

This question concerns the internal environment of the organisation. Basically, how it is measured is covered in the survey as well as in the case studies. The 'how' encompasses formal and informal structure within the organisation, prevailing culture practices by organisational employees, organisational politics in the organisation, and processes issues. From the studies, high performance organisations (organisations that perceive themselves to be high performance) make use of formal structure to create a pathway for continuous improvement. This formal structure is in the form of committees such as a quality assurance committee to oversee that the activities are focus at the rudimentary level. Top management commitment in nurturing the measurement culture plays a role in the organisation, as employees are empowered to learn if management gives priority to the activities. This can be seen in the case studies where quality improvement activities are widespread in the organisation. Organisational politics influences how we measure performance in an organisation. The authority concerned, the Ministry of Health, requires all hospitals to submit performance indicators, and the public sector regardless of performance reports indicators to the Ministry. However, it can be seen that the indicators are not integrated, it is merely a reporting system. This is the politics currently practised by the Malaysian government. The performance measurement system is a dynamic process where it is part of the organisation evolutionary process. Each and every organisation is different in its practices and the Ministry must understand these dynamics in order to fully comprehend the complexities that surround it. Processes involve all factors that will have direct and

indirect effects of delivering services to the patients. High performance organisations have good internal control systems where processes are being taken care of by process owners. These processes are governed by quality procedures within the organisation. Recently, in Malaysia the Ministry of Health has instructed CARE pathways to be drafted as suggested in the literature. CARE pathways are guidelines used to govern health organisations in the form of documents and record. Details of these pathways have been extensively discussed in the literature (Chapter Two).

8.4.2 The 'What' Question

This question is primarily concerned with what type of measures are taken given the strategy that top management has chosen. This is answered in the survey as well as in the case studies. This stage is at the strategy formulation phase where an organisation has identified critical and non-critical processes. For high performance organisations, critical processes are identified and result in key performance indicators as in Hospitals A and C. However, if they are not identified, the organisation merely reports indicators regardless of values that are portrayed in the performance objectives as suggested in the literature. What is measured depends on the organisational value of the processes themselves.

8.4.3 The 'Why' Question

This question interacts with the above question and as such is more comprehensive in nature. The 'why' is about the external environment in which the organisation interacts, including the state of the economy, and the degree of government regulation imposed on hospitals (as well as the healthcare industry). Full autonomy over the industry lies with the government, and is also called stewardship. This is necessary for developing countries as health issues are National Security issues. Health by nature is a complicated area that requires constant surveillance from the authorities, and so is expensive to maintain. All the case studies show classic symptoms of stewardship. It is a 'strictly regulated' industry. Due to this complex interaction, healthcare needs sophisticated information systems to act as a buffer against some of the environmental factors. Chapter Three deals in detail with the 'why' question.

8.5 CRITICAL REFLECTION

Healthcare services have always been an issue, especially in developing countries like Malaysia (Ministry of Health, 1999). The researcher sought to explore the issue of measuring performance in healthcare settings since healthcare contributes 12% of Malaysian GDP. The study conducted highlighted the need for further research in the field of performance measurement in healthcare services.

The researcher then explores the literature on performance measurement and found that most of it was concentrated on the manufacturing sector. Services have

just recently been recognised as an important sector, the manufacturing, in an advanced economy like United States and United Kingdom (see table 2.11 for details). Moreover, the literature is also skewed towards other industries such as textiles, transportation and etc, rather than healthcare industry. Healthcare itself is complex not to mention measuring it. This difficulty in measurement is one reason why healthcare dependability decline over the years. This has been discussed in greater detail in Chapter Two of the thesis. The researcher has identified six gaps in the literature, they are:

- Developing versus developed countries
- Service sector versus manufacturing sector
- Healthcare industry versus other industries
- Public/Private hospitals versus Public +Private hospitals
- Survey method versus case study method
- Theoretical approach versus empirical approach

Details of the gaps have been discussed in Chapter Two. These are gaps that have been identified and the empirical study was designed around this issue in mind. Triangulation technique was used to ensure that all primary and secondary data collected yield same result. Thus, increase the reliability and validity of the study. All findings has been reported and analysed in Chapter Five and Six. This study has put forward the idea of an effective performance measurement in a more holistic manner, that is systems view in an organisational context. The hierarchy of measures

is crucial at each level as it determine the level of activities of the process owner. All of this contributes in filling the gaps above.

Most of the study (literature) conducted concentrates on prescriptive measures, using surveys. These types of measures are not built to last since they are static, appropriate for short term purposes. This study, on the contrary, tries to understand the very nature of performance measurement by studying organisational phenomena as suggested by many performance measurement advocates.

The researcher believes that this thesis contribute to the body of knowledge in the field of performance measurement. The framework develop in this thesis serves as guidelines to practitioners in the field of performance measurement to look at measures in an integrated forms (not in isolation), so as organisation get the full impact (benefit) from its implementation. This framework provides a useful perspective for studying performance measurement in developing countries by understanding the forces that shape the Malaysian healthcare systems.

Moreover, the public and private sectors of the economy could learn from each others experience in designing performance measurement system in their organisation as both have different set of objectives and purposes rendered within their organisations. This sectorial learning would not only gain knowledge in terms of strategic alliance but also develop a more robust surveillance systems for the healthcare industry in general. Thus, the healthcare industry would improve over the long run.

However, there are weaknesses posed in the study. The framework developed is limited in a number of ways. The framework is meant to apply within the context of developing countries as it has some salient characteristics of the Malaysian

healthcare industry. The framework also portrays a healthcare industry only, as it has captured the unique and multidimensional perspective only attributable to this kind of industry.

Furthermore, the responses collected are perceptions of the hospitals directors as to how they view performance measurement within their organisations rather than objective quantifiable measures. However, the survey reveals that their vast experience and their reservoir of knowledge contribute towards understanding performance measurement.

The framework developed via multiple case studies is untested. Consequently, the validity, usefulness and power of the framework is yet to be seen. There is a need to validate the framework at the marketplace for both sectors under study. Until this is done, the framework will be generic in nature.

8.6 SUMMARY

The survey and case studies show some apparent differences between high performance and low performance organisations in the Malaysian healthcare industry.

1. It seems that high performance organisations make use of a formal strategy formulation and deployment more than low performance organisations. This can be seen from the quality assurance structure created to monitor performance.