

**INVESTIGATION ON SUPPLY CHAIN PRODUCTIVITY: A STUDY IN PRIVATE
HOSPITALS MALAYSIA**

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ABSTRAK

Kajian ini bertujuan untuk menyelidik sejauh mana pelaksanaan produktiviti rantaian pembekalan di kalangan hospital swasta di Malaysia. Dalam kajian ini, penentu-penentu yang mempengaruhi prestasi perkhidmatan rantaian pembekalan, serta kesan-kesan prestasi perkhidmatan rantaian pembekalan ke atas produktiviti telah diterokai. Di samping itu, peranan perkhidmatan prestasi rantaian pembekalan dalam hubungan antara penentu-penentu dan produktiviti rantaian pembekalan juga telah dinilai. Untuk mengumpul data, soal selidik telah dijalankan melalui pos, menghantar kepada semua hospital swasta di Malaysia. Daripada 124 soal selidik yang dihantar, 74 soal selidik telah diterima, menghasilkan kadar tindak balas 59,68%. Hasil kajian menunjukkan bahawa ketiga-tiga penentu utama (manusia, process and teknologi) mempunyai kesan positif terhadap prestasi perkhidmatan rantaian pembekalan dari segi kos dan kualiti. Keputusan juga menunjukkan bahawa prestasi kos perkhidmatan rangkaian pembekalan secara positif berkait rapat dengan produktiviti rantaian pembekalan. Walaubagaimanapun, tiada hubungan yang signifikan didapati di antara kualiti prestasi rantaian pembekalan perkhidmatan dan produktiviti rantaian pembekalan. Ia juga menunjukkan bahawa prestasi kos perkhidmatan rangkaian pembekalan memberi kesan pengantara sepenuhnya kepada tiga penentu produktiviti rantaian pembekalan. Walau bagaimanapun, tiada kesan pengantara telah ditemui di tiga penentu produktiviti rantaian pembekalan dengan kualiti prestasi rantaian pembekalan perkhidmatan. Kajian ini menegaskan bahawa persefahaman yang baik terhadap penentu produktiviti rantaian pembekalan telah memainkan peranan penting dalam meningkatkan prestasi rantaian pembekalan perkhidmatan dan seterusnya meningkatkan produktiviti rantaian pembekalan.

ABSTRACT

This study aims to investigate the extent to which supply chain productivity practices is implemented among private hospitals in Malaysia. In this study, the influence of the determinants on service supply chain performance, as well as the impact of the service supply chain performance on supply chain productivity have been explored. In addition, the role of service supply chain performance in the relationship between the determinants and supply chain productivity has also been assessed. To explore findings, a questionnaire survey was conducted through mail. The questionnaire surveys have been sent to all private hospitals in Malaysia. Out of 124 questionnaires sent out, 74 questionnaires were received, resulting in a response rate of 59.68%. Based on the results obtained, all three determinants (people, process, and technology) were found having positive impact on service supply chain performance in terms of both cost and quality. The results also showed that service supply chain cost performance is positively related to supply chain productivity. However, no significant relationship was found between the service supply chain quality performance and supply chain productivity. It is also observed that service supply chain cost performance fully mediates the effect of the three determinants on supply chain productivity. However, no mediating effect was found in the three determinants to supply chain productivity relationship by the service supply chain quality performance. Lastly, this study highlighted that a good understanding of the key determinants for supply chain productivity has played a significant role in improving service supply chain performance, which will in turn, increases the supply chain productivity.

CHAPTER 1

1.0 Introduction

This chapter depicts a brief background of the study. The chapter includes problem statement, research questions of the study, research objectives of the study, significance of the study, contribution of the study, as well as the scope of the study. Definition of key terms and organization of the report are also provided at the end of the chapter.

1.1 Background of the Study

Productivity has become increasingly important in recent years. In the Tenth Malaysia Plan (10MP), “unleashing productivity-led growth and innovation” has been listed as one of the ten main premises to be focused on by the Government in order to transform the nation towards achievement of Vision 2020. According to the Prime Minister, productivity has played an important role in transforming Malaysia into a high-income nation and to remain competitive in the regional and global stage. Under this plan, twelve national key economic areas (NKEAs) that potentially generate high income have been identified, which includes private healthcare, which is the industry of focus in this study. The emphasis of the government in productivity has enforced all parties to look into this particular area and carry out proper plans to achieve it.

Today, private health sector has become more and more important. Before 1980, there were only a small number of private hospitals, and most hospitals were mainly community or philanthropic supported (Olorunniwo & Hsu, 2006). However, after 1980, profit-oriented private hospitals have grown rapidly, particularly in the urban areas. As for now, investor owned healthcare business has dominated the private health care business (Chee & Barraclough, 2007). Some even listed on the stock exchange. According to Olorunniwo and

Hsu (2006), about 76 percent of the total health care expenditure was constituted by the government in 1980s. Nonetheless, by 2000, the private health sector contributed approximately 40 percent of the health care expenditure. The fast growing of the private health sector is mainly due to the government's policy which allows the private sector to play a more significant role in areas like health and education since the early eighties (Chee & Barraclough, 2007).

Currently, a few challenges have been faced by the health care sector, which include the increasing costs of medication and equipment, increasing demand of quality healthcare and sophisticated equipment, as well as changing patterns of diseases which will inevitably result in a higher healthcare cost in future (Ministry of Health Malaysia, 2011).

According to the World Health Organization (WHO) report on Malaysia, an increase in Malaysia's healthcare expenditure was observed in 2008, which have totaled to RM31, 869 Million NCU, or about 4.3% of the GDP compared to about 3% of the GDP in 1995. Besides that, it is also reported that the healthcare costs in Malaysia have increased ten percent every year, outpacing the general inflation rate (The Star, 2009). Moreover, competition among private hospital and public health facilities has also driven all the healthcare organizations to pursue cost reduction, retrenchment or even shut down the facilities (Gumbus et al., 2003). Consequently, in order to reduce costs, multiple cost cutting approaches have been carried out by most of the hospitals. While achieving cost reduction, their profit margin continues to shrink every year. Instead of targeting only more and more patients, decreasing cost to satisfy patient demand and an emphasis in improved service quality are the concerns of many health care organizations nowadays (Walker & Dunn, 2006). By applying supply chain productivity concept in the healthcare industry, it can help to maintain profitability of the healthcare organizations, and at the same time, reducing costs and improving their service quality.

1.1.1 Supply Chain Management in Hospitals

Supply Chain Management (SCM) is the process of planning, executing, controlling and monitoring of the supply chain operations with the aim of fulfilling the customer demand in an effective and profitable manner (Bakar, Hakim, Chong, & Lin, 2010). SCM highlights on the planning and management of all activities involved in sourcing, procurement, conversion and logistics management. Besides these, SCM also plays primary responsibility to link major business functions and business processes within and across companies (Maddox, 2005). Every business fits into one or more supply chains and has a role to play in each of them. By learning how to form and get involved in strong supply chain, these companies can gain competitive advantage over their competitors, and further increase their market share.

Supply chain management techniques have proven success in many other industries such as manufacturing, agricultural business, aerospace, retailing, construction, steel, automotive, railway, banking and financial institutions, textile and even small and medium sized enterprises (Bakar et al., 2010). In these industries, SCM was recognized as an effective tool for achieving cost reduction for all parties within and beyond an organization. In healthcare industries, although they are slow to adopt SCM, more and more studies related to SCM have been conducted lately to reduce operating costs while improving customer satisfaction (e.g. Toba, Tomasini & Yang, 2008; Neumann, 2003; Abhra, 2010; Mustaffa & Potter, 2009; Kumar, Ozdamar & Zhang, 2008; Al-Mudimigh, Mohamed Zairi & Ahmed, 2004, Meijboom, Schmidh-Bakx & Westert, 2011).

However, according to Gronroos and Ojasalo (2004), there are several drawbacks of focusing solely in cost cutting strategies. A deterioration of the service quality can result from the cost cutting activities, which will induce customer dissatisfaction and cause them to look for other options elsewhere. As a result, it will cause the service providers' revenue producing capability to decline, and thus affecting their productivity.

1.1.2 Supply Chain Productivity in Hospitals

Traditionally, the term of productivity is defined as the ratio of output to input (Rutkauskas & Paulaviciene, 2005). The productivity can generally be improved through several ways: (1) increase the output; (2) decrease the input; (3) increase both input and output, but output increased at a faster rate than input; (4) decrease both input and output, but input decreased at a faster rate than output. The concept of productivity is widely applied in manufacturing sectors to manage and enhance the production efficiency of the manufacturing. Nonetheless, in service context, the application of such a productivity concept is limited. Most researchers (e.g. Rutkauskas & Paulaviciene, 2005; Gronroos & Ojasalo, 2004) claimed that the application of productivity concept in service sector is more complicated than in manufacturing due to several reasons: (1) it has a larger scope; (2) it involves customers in service delivering process; (3) it is hard to define one unit of a service; and (4) varying perceived quality of output and customer value as a result of the changes in inputs. Consequently, productivity measurement in services is usually based only on partial measurements, which considers only a single input in the ratio (Gronroos & Ojasalo, 2004). Labor productivity is among the partial productivity measures that are most commonly used, which measures the amount of goods or services that a labor generates in a given amount of time (Enshassi, Mohamed, Mayer & Abed, 2007). Other productivity measures include Total Factor Productivity, which is defined by the total output to total input ratio, whereby the total inputs consists of labor, capital which include natural resources, structures, equipment and inventories, and intermediate products which include materials, components, supplies, energy, and services purchased from other producers (Li & Prescott, 2009).

So far, only a very limited number of studies have been conducted regarding the topic of supply chain productivity. In the study of Bynes (2005), supply chain productivity is defined as a ratio, namely return on invested capital (ROIC). ROIC is represented by net

profits, which are generated by the supply chain assets divided by the assets, primarily inventory, which is required to generate the profits. According to the author, ROIC plays an important role in indicating the true performance of the supply chain instead of focusing solely in reducing supply chain costs.

1.1.3 Private Hospitals in Malaysia

In Malaysia, the number and range of private hospitals, specialist hospitals and clinics have grown considerably all over the country over the last decade. The health care services in Malaysia are of world class standard and the medical cost in Malaysia is one of the most competitive in the world (Ministry of Health Malaysia, 2010). Furthermore, the medical services provided by medical institutions in Malaysia are close to those developed country such as the United State, United Kingdom and European countries (Malaysian Pharmaceutical Society, 2002). All doctors and specialists are of high qualification and obtained their training at industry-leading overseas medical schools for instance the United Kingdom, United States and many other countries in addition to local universities.

Recently, there are more and more private hospital been formed all over the country such as Pantai Group of Hospitals, Gleneagles Intan Medical Center, Loh Guan Lye Specialists Centre, and KPJ Healthcare Berhad and Sunway Medical Centre (SUNMED). It is compulsory for all private medical institutions in Malaysia to be accredited under the Private Healthcare Facilities and Services Act 1998 and conform to a regulator working closely with the Ministry of Health who manages, governs and coordinates these hospitals (Ministry of Health Malaysia, 2011). Other than licensing, most private hospitals have obtained international accreditation, including Joint Commission International (JCI) accreditation and Malaysian Society for Quality in Health (MSQH) accreditation, which are recognized members of the International Accreditation Federation Council (IAFC). Hence, assures

patients the best efficiency and quality.

Today, medical tourism is one of the fastest growing businesses in Asia. Under the Ninth Malaysia Plan, more private sector initiatives have been targeted by the government to promote Malaysia as a regional hub for health tourism in both traditional and modern medical treatment (Rasiah, Wan Abdullah & Tumin, 2011). In Malaysia, many private hospitals have implemented the Champaign and offer a variety of medical services, which include cancer treatment and pain management, cardiology and cardiothoracic surgery, fertility treatment, general screening and wellness, orthopedics surgery and rehabilitative medicine and so on. Due to Malaysia's medical expertise and tourism attractions, patients that seek medical treatments are increasing from year to year. According to Ganesan (2012), 578, 403 of foreign patients have visited Malaysia in 2011, with total spending of RM509.77 million. This has resulted in 34.5% increment in revenue and 47.2% growth in the number of patients as compared to 2010. In addition, a revenue of RM548 million and a total of 600,000 patients as a result of medical tourism have been projected in 2012.

Given the importance of the private healthcare industry to the Malaysian economic growth and a lack of systematic study in supply chain productivity in this industry, a study will be conducted among private hospitals to examine the relationship between the supply chain productivity determinants and the service supply chain performance, as well as the supply chain productivity.

1.2 Problem Statement

Hospitals today are under enormous pressures due to the fact that compensation and revenue are decreasing whereas costs are rising. The World Health Organization (WHO) has reported an increase in Malaysia's health care expenditure in 2008, which has totaled to RM31, 869 Million NCU, or about 4.3% of the GDP as compared to about 3% of the GDP in 1995. The

Star published in 5 July 2009 has also reported an increase in health care costs Malaysia of about 10% every year, outpacing the general inflation rate. In order to reduce costs and sustain profitability, great efforts have been made by the hospitals to enforce cost reduction programs via supply chain management. While these efforts have made a difference, profit margins continue to shrink from year to year. Implementation of the cost cutting strategies has resulted in diminishing returns. In the early stage, the largest cost savings will be captured. However, subsequently, extra savings are few and far between.

According to Byrnes (2005), to improve profitability and to determine the true performance of the supply chain, a focus on the productivity of the assets in their trust is required, instead of controlling only the costs of these assets. Therefore, in this study, the concept of supply chain productivity will be examined in the context of private hospitals in Malaysia. The key determinants of supply chain productivity will also be studied. Besides that, the effects of the determinants on both service supply chain performance and the supply chain productivity, and the role of the service supply chain performance in the relationship of the determinants and supply chain productivity will also be examined.

1.3 Research Questions

This study attempts to investigate the determinants of supply chain productivity in private hospitals in Malaysia. It also investigates the relationship between the supply chain productivity determinants and the service supply chain performance as well as the supply chain productivity. Specifically, the following questions are developed:

1. To what extent supply chain productivity is implemented among private hospitals in Malaysia?
2. What are the determinants that contribute to supply chain productivity in hospital Penang?

3. How do the determinants affect service supply chain performance?
4. How does service supply chain performance affect supply chain productivity?
5. What is the role of service supply chain performance in the relationship of the determinants and supply chain productivity?

1.4 Research Objectives

Four research objectives have been developed based on the questions above:

1. To investigate the extent of supply chain productivity implementation among private hospitals in Malaysia.
2. To identify the key determinants which contribute to supply chain productivity in private hospitals in Malaysia.
3. To investigate the relationship between supply chain productivity determinants and service supply chain performance.
4. To investigate the relationship between service supply chain performance and supply chain productivity.
5. To investigate the mediation effect of service supply chain performance in the relationship between the determinants and supply chain productivity.

1.5 Significance of the Study

This study is important to provide valuable insights regarding supply chain productivity implementation among private hospitals in Malaysia. From a theoretical perspective, this study suggests to fill the gaps of the existing research literature concerning supply chain productivity in private hospitals Malaysia by addressing the following issues: Firstly, this study intends to investigate the relationship between the key determinants of supply chain productivity in terms of people, process and technology, and the service supply chain

performance in terms of cost and quality; Secondly, this study intends to investigate the relationship between service supply chain performance and the supply chain productivity in terms of return on invested capital; and lastly, this study aims to investigate the role of service supply chain performance in the relationship of the determinants and supply chain productivity. In this study, a new framework is created for future research with regard to the relationships between supply chain productivity determinants and service supply chain performance, as well as supply chain productivity. In terms of practical significance, the findings of the study will be useful to the top management and practitioners of an organization to properly design their supply chain productivity implementation in order to improve their supply chain performance as well as their supply chain productivity.

1.6 Contributions of Study

Over the past, great emphasis has been putting on cost reduction through supply chain management across all the industries. Most of the industries including the hospital industry are not aware of the importance of the supply chain productivity concept, which promotes lower costs, higher profitability and greater competitiveness for an organization. Thus, some theoretical and practical contributions from this study is anticipated in the private hospital industry.

1.6.1 Theoretical Contributions

The following is the detail of the theoretical portion which will contribute towards knowledge of supply chain productivity via the study:

- i. This study examines the key determinants of supply chain productivity which is useful for the private hospitals in Malaysia that wish to enhance their supply chain

productivity while attaining higher profitability and remain competitive within the industries.

- ii. This study gives a general guideline of supply chain productivity knowledge for private hospitals in Malaysia. Private hospitals gain to assess the true performance of their supply chain by measuring the productivity performance of their supply chain as a whole instead of focusing only on individual productivity performance measures such as labor and capital productivity measures.
- iii. This study provides useful information about service supply chain performance measures. Hospitals are better able to determine the appropriate measures for assessing their supply chain performance, while continue driving for improved health care quality at affordable costs.

1.6.2 Practical Contributions

The following is the detail of the practical portion which will contribute and aid the managers, executives, as well as the team in business and related organizations to improve their knowledge and performance:

- i. The study of the key determinants of supply chain productivity in private hospitals Malaysia provides the management team of an organization with important know-how regarding the significance of the supply chain productivity practices in ensuring a higher level supply chain performance for an organization, while achieving higher supply chain productivity, as well as greater profitability, which can further enhance its competitiveness in the marketplace.
- ii. The results of the study can also be applied by the organizations to determine their objectives and future direction. With this, better strategy planning can be achieved when making a decision, hence, leading to better company reputation globally.

- iii. This study highlighted the impact of the supply chain productivity determinants on service supply chain performance as well as supply chain productivity. This provides a higher confidence level among private hospitals who wish to adopt the supply chain productivity practices. In addition, it encourages the management team to invest in these initiatives using the right methodologies, without affecting the overall performance of the organization.
- iv. This study provides useful insights for private hospitals in Malaysia regarding the role of service supply chain performance in the relationship between the key determinants and supply chain productivity. This is important to enable hospitals identify the important factors that can help improve their supply chain performance and further lead to increased supply chain productivity.

1.7 Scope of Study

In order to study the management of supply chain productivity in Malaysia, private hospital industry in Malaysia has been chosen as the focus of the study. According to Ganesan (2012), private hospitals have played a significant role in Malaysian economic growth nowadays. However, many hospitals have endured the stresses and strains for reducing their supply chain costs while sustaining or increasing their profitability. In order to maintain their profitability, various cost cutting strategies have been implemented. Nonetheless, diminishing returns were observed rather than improved profit margin.

This is primarily an exploratory study since the development of supply chain productivity concept is still relatively new. This study emphasizes the key determinants, supply chain productivity, and service supply chain performance among private hospitals in Malaysia. This study assesses the impact of various determinants which might have a positive or negative influence on service supply chain performance as well as the supply chain

productivity. Moreover, this study also evaluates the relationships between service supply chain performance and supply chain productivity. The role of the service supply chain performance in the relationship between the determinants and supply chain productivity has also been explored. These findings are vital to enable better understanding of the actual impact of implementing supply chain productivity among private hospitals in Malaysia. These findings will also provide useful insights to the hospitals on the important factors required to improve service supply chain performance as well as the supply chain productivity. Basically, this study can be divided into three portions. Firstly, the study of the impact of key determinants (people, process and technology) on supply chain productivity; secondly, the study of the impact of key determinants on service supply chain performance (cost and quality), and lastly, the study of the impact of service supply chain performance on supply chain productivity.

1.8 Definitions of Terms

People: In this study, people are used synonymously with human resources, which are defined as individuals who make up an organization workforce (Inyang, 2010).

Process: Process is regarded as the essential link for all programs and services provided by a hospital (Toba, Tomasini, & Yang, 2008)

Technology: Technology is defined as the making, usage and knowledge of techniques, systems or methods of organization in order to solve a problem or carry out a specific function.

Service Supply Chain Cost Performance: Service supply chain cost performance of this study refers to production efficiency and utilization (Li et al., 2002).

Service Supply Chain Quality Performance: Service supply chain quality performance of this study refers to clinical quality, service quality, and customer satisfaction (Li et al., 2002; Li & Benton, 2003; Li & Benton, 1996).

Supply Chain Productivity: Supply chain productivity is defined as a ratio, namely return on invested capital (ROIC), which is represented by net profits divided by the invested capital, primarily inventory (Koller, 1994).

1.9 Organizations of the Report

This study contains five chapters. Chapter one provides an overview of the background and structure of the study, the problem statements, research questions, research objectives and significance of the study. Chapter two covers the literature review, and the underlying theories developed to explain the relationship of the variables under study. In addition, this chapter also presents the theoretical framework and research hypotheses of the study. Chapter three reviews the research methodology of the study which includes research design, sampling and procedures, data collection method, and the statistical tools employed in testing the hypotheses. Chapter four illustrates the analysis and results of the data collected from the survey. Last but not least, chapter five discusses the results, as well as the theoretical and managerial implications of the study. In addition, the limitations of the study and suggestions for future research have also been included at the end of the chapter.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter presents significant contributions from prior studies related to topics of supply chain productivity, its determinants, and the mediating effect of service supply chain performance on supply chain productivity. In this chapter, theory and research concerning supply chain productivity, its determinants, and the mediating effect of service supply chain performance on supply chain productivity, are discussed. Lastly, a theoretical framework and hypotheses are presented to show the relationships between the studied variables.

2.1 Supply Chain Productivity

According to Byrnes (2005), supply chain productivity is essentially a ratio, namely Return On Invested Capital (ROIC). ROIC is represented by net profits, which are generated by the supply chain assets divided by the assets, primarily inventory, which is required to generate the profits. ROIC plays an important role in indicating the true performance of the supply chain instead of focusing solely to reduce supply chain costs. Refer to Koller (1994), ROIC can be defined in the following way:

$$\text{ROIC} = \text{Profit Margin} / \text{Invested Capital}$$

$$\text{Where, Profit Margin} = \text{Revenue} - \text{Cost},$$

$$\text{Invested capital} = \text{Working Capital} + \text{Fixed Capital}$$

2.2 Determinants for Supply Chain Productivity

McCrea (2010) suggested that the best practices in supply chain productivity consist of three elements. They are people, process, and technology, which are vital, yet frequently overlooked.

2.2.1 People

People are often described as the most important assets of the organization. Without proper human resources in place, organizational success will not be achieved even with the support of the technology. In healthcare industry, human resource management plays a significant role in delivering high quality health care services and facilitating optimal patient outcomes. Proper management of human resources can lead to organizational success by supplying adequate numbers of competent and motivated employees, and facilitating the effective use of this labor force. Here, five aspects of human resource management practices are being discussed: recruitment and selection, training and development, compensation and benefits, performance appraisal, and empowerment (Tsaur & Lin, 2004; Liu, Combs, Ketchen, & Ireland, 2007; Thang, Rowley, Quang, & Warner, 2007).

2.2.1.1 Recruitment and Selection

Recruitment is often defined as the collective efforts of an organization to search, attract, and influence the job selection of competent applicants (Ployhart, 2006). Recruitment is always the core of the complete human resource system in an organization and could affect the effectiveness of many other human resource activities for instance selection and training which depend mainly on the quality of new employees recruited. Breaugh and Starke (2000), and Breaugh (2008) defined four stages in the recruitment process, which include recruitment objectives, strategy development, recruitment activities and recruitment results. Based on the

studies, the establishment of clear objectives is important for an organization to develop sound recruitment strategies. Having well developed recruiting strategies, an organization can next undertake the recruitment activities that may result in certain desired outcomes. When evaluating the recruitment results, an organization can compare its recruitment objectives against its recruitment results. Doing so allows the recruiter to learn from mistakes and can better recruit in future.

Selection involves a process of screening and choosing the most suitable applicant for the various vacancies in the organization. Selection of employees is vital for building a productive workforce (Liu et al., 2007). To identify people with the knowledge, skills and abilities closely matched to the requirement of individual jobs require systematically designed selection processes. The selection process is tricky. It requires a good match not only between a person and a job, but also between a person and a company's culture and values. According to Kristof-Brown, Jansen, and Colbert (2002), there are three types of fit: person-job, person-group, and person-organization. According to the authors, person-job fit represents the congruence between the applicant's abilities and the competency requirements of the job, person-group fit represents the compatibility between the applicants and the coworkers, and person-organization fit represents the congruence between the applicant's values and the organization's culture. All these three types of fit have significant and independent effects on individuals' job satisfaction (Kristof-Brown et al., 2002). By matching the right person with the right job and company, a better synergy and higher job satisfaction could be achieved and the person will tend to stay committed to the company. However, without a good fit, high turnover and low job satisfaction may result (Kristof-Brown, Zimmerman, & Johnson, 2005).

Many selection practices can be utilized to improve fit. Ployhart (2006) has identified several important selection practices, including structured interviews, cognitive ability test,

personality test, situational judgment tests, assessment centers, and work samples. According to the author, organizations that wish to best balance diversity should apply selection practices like assessment centers, work samples or situational judgment as they exhibit smaller subgroup differences compared to cognitive ability yet indicate equivalent levels of validity and more favorable user responses.

2.2.1.2 Training and Development

Training is often defined as the amount of formal instruction given to employees (Liu et al., 2007). Training not only contributes to the transfer of knowledge and increased employee capabilities, but also positive attitudes towards training and the organization (Chang, Gong, & Shum, 2011). Most organizations offer both initial training and on-going training to their employees. Training focuses on company specific policies and procedures, job related, leadership or social skills can help employees approach the requisite skills and further advance in their careers (Liu et al., 2007).

Furthermore, employee training is important to successfully use technology in the process flow (Li & Benton, 2006). Both technology decision and human resource decision must be aligned to support each other. An adequate training is crucial to completely realize the gains of technology. Increased level of employee training can not only contribute to increased confidence level of decision making among the staff, but also lead to continuous improvement and result in improved health care service quality in hospital.

Stavrou, Charalambous, and Spiliotis (2007) suggested that training and development can add value to an organization by increasing productivity, enhancing employee skills and assisting it to better facing external pressures. Employee training could also lead to significant gain in profitability and market valuation (Mayrhofer, Morley, & Ledolter, 2011).

Hiltrop (1996) has defined five key steps for performance improvement, involving: (i) identify and define ETD needs, (ii) define the learning required, (iii) plan the required ETD activities, (iv) implement the planned ETD activities, and (v) assess each activity and make changes as needed.

i. Identify and Define ETD Needs

Corporate, team, occupational and individual needs will be analyzed and identified at this stage to determine the skills or knowledge to be acquired or existing competencies that need to be further improved. Strategic ETD should be more proactive, that is, should focus more on defining and fulfilling ETD needs for managing the organization in future instead of fixing solely the problem nowadays.

ii. Define the Learning Required

It is important to clearly define the skills, knowledge and levels of competence employees require learning or developing at each stage. In addition, the area for further improvement should also be clearly defined.

iii. Plan the Required ETD Activities

The use of the correct mix of methods and techniques is necessary for the right sets of skills, knowledge and abilities acquired by the employees towards satisfying the needs and goals. In this stage, the most effective method or activity would be determined to fulfill the particular ETD needs of both people and organization.

iv. Implement the Planned ETD Activities

It is important to ensure that both managers and employees are adhered to the plans and are held a great responsibility in making ETD successful.

v. Assess Each Activity and Make Changes as Needed

This stage involves evaluating the effectiveness of each ETD plan or activity to measure how much improvement it has contributed in terms of attitude, competency and performance and make necessary changes to further strengthen the organization's competitive position.

However, there is one potential drawback of stressing training, that is, losing employees to their competitors after the employees are trained and possess the required set of knowledge and skills (Liu et al., 2007). To prevent this from happening, managers should put effort to retain the well-trained employees. This could be reached by using other human resource management practices for instance linking incentive compensation to training and promote internal promotion. The training results also need to be properly matched to the company's specific goals in order to avoid the knowledge and skills gained being easily applied elsewhere.

2.2.1.3 Compensation and Benefits

Compensation system is one of the most important dynamics influencing job selection. Appealing compensation not only motivates performance, but also helps to develop an organization's reputation as good employer, which further attract and retain high quality employees (Namasivayam, Miao, & Zhao, 2007). Eventually, it leads to an increased overall level of knowledge, skills and abilities among employees (Liu et al., 2007).

Compensation system also plays a vital role in influencing organizational performance (Namasivayam et al., 2007; Liu et al., 2007). This is particularly true for service industries which largely rely on human to deliver high quality services. In the study of Hinkin and Tracey (2000), the structure of an organization's compensation system is found associated with retention rate and ultimately organizational performance. High compensation can boost motivation, increase productivity and reduce turnover, which leads to enhanced overall organizational competitiveness (Dulebohn & Werling, 2007).

According to Namasivayam et al. (2007), the total compensation that one obtains could generally fall into two categories: (1) direct compensation, and (2) indirect compensation. Direct compensation includes base compensation such as wages, and salary, plus pay incentives such as bonuses, and profit sharing. Indirect compensation includes benefits like health insurance, and unemployment insurance. Today, indirect compensation or benefits has become increasingly important to both employers and employees. This is especially true for costly benefits like health insurance and pension plans, which plays a significant factor in attracting and retaining desired employees (Dulebohn, Molloy, Pichler, & Murray, 2009). Generally, benefit costs constitutes about one-third of an organization's total labor costs, and it is rising progressively nowadays (Alpert & Woodbury, 2000).

Yanadori and Marler (2003) suggested that an organization's compensation system should be properly aligned with its overall human resource management system and with its business strategy. Thus, to choose among the various incentive compensation options, a careful analysis of the strategic goals as well as the job nature involved will be required by the managers.

2.2.1.4 Performance Appraisal

Performance appraisal is defined as a mechanism that assesses the extent of the daily performance of an individual employee associated with the organizational goals and objectives (Coutts & Schneider, 2004).

Performance appraisal is among the most important human resource practices as it provides management with a systematic basis for effectively recognizing and assessing the current and potential capabilities of human resource (Nyaoga, Kibet, & Magutu, 2010). Performance appraisal allows an organization to identify the employee's strengths and weaknesses, assists employees to improve their weak points and contribute positively to overall organizational performance (Grubb, 2007). In healthcare industry, an employee's performance is important as it directly impacts the service quality and patient satisfaction. An effective appraisal not only eliminates employee behavior and work quality problem, but also encourages an employee to maintain competencies, engage in learning opportunities and contribute more to an organization.

The debates over performance appraisal system have been going on and on since centuries. Some criticized that the system is not as accurate as it is made to be, but rather subjective and biased (Behn, 2003). Others viewed the system as financially costly and socially demoralizing (Grubb, 2007). Some even held the opinion that the performance appraisal system is fundamentally flawed (Gray, 2002). Nonetheless, advocates of performance appraisal system argued that the system is essential in organizations. Rafikul Islam and Shuib Mohd Rasad (2005) cited several reasons for utilizing performance appraisals systems in organizations, which include the needs of the system to support various human resource decisions for instance pay increment, compensations, promotions, demotions, terminations and others, as well as to determine employee's training requirements. On top of that, performance appraisal practice also played an important role in creating competitive

advantage. Roberts (2003) debated that a reduction in the impacts of many of the system's negative elements can also be achieved through compliance with guidelines such as: (1) encouraging employees' participation in the appraisal process; (2) developing reliable, fair and trustworthy performance standards; (3) setting proper goals; (4) conducting sound performance appraisal interview; (5) encouraging self evaluation; (6) ensuring effective management feedback; (7) developing user friendly procedures; (8) designing specific and relevant appraisals; (9) providing extensive training to evaluator; (10) regularly reviewing performance appraisal process to ensure the effectiveness of the system, as mentioned in the studies of Nyaoga et al. (2010).

Last but not least, extra care should be considered in enforcing performance appraisal system. Communications problems encountered during the appraisal feedback process between the supervisors and employees can also be reduced through the establishment of clear and practical performance standards (Mostafa Jafari, Atieh Bourouni, & Roozbeh Hesam Amiri, 2009). However, ineffective appraisal system can cause numerous problems such as low self-confidence, reduced employee productivity, and a decreasing employee enthusiasm and support for the organization (Rafikul Islam & Shuib Mohd Rasad, 2005).

2.2.1.5 Empowerment

Empowerment is typically described as the process of delegating or the decentralization of decision making power (Klidas, Berg & Wilderom, 2007). Empowerment also refers to a power-granting arrangement wherein employees can participate in the decision making process regarding their job and being given necessary training to offer superior customer services and to gain competitive advantage through improved service quality (Tiilay Guzel, Sule Aydin Tukelturk, & EmrahOzkul, 2008).

Thang et al. (2007) cited several reasons for involving employees in work related decisions, which include: (1) decisions are more readily recognized when one takes part in the decision making process; (2) diverse input frequently results in better decision; (3) an environment of trust within staff is set up. Many approaches to conceiving employee empowerment, according to Dimitriades (2005), can also be divided into three main categories: (1) an act of granting power to the individual being empowered; (2) a process which contributes to the experience of power; and lastly a psychological state which manifests itself as cognitions that is measurable.

Klidas et al. (2007) noted that empowerment is especially vital for service sectors, where employees require the authority to react quickly to the individual demands of the growingly demanding consumers in growingly unforeseeable service situations. In service sector, empowerment was found positively related to productivity, performance and service quality (Thang et al., 2007). The more empowered the teams, the more productive they are, and the higher levels of customer service, job satisfaction, organization commitment and team commitment they could gain.

2.2.2 Process

Process is typically defined as a particular course of action intended to achieve a result. A process is important as it determines the results obtained. In health care industry, process improvement is crucial for lowering costs and improving services. Neumann (2003), Reiner (2005), and Toba, Tomasini, and Yang (2008) suggested that the biggest opportunities to reduce costs and improve operations come from addressing processes involved with product management, sourcing and contracting, purchasing and payment cycle, and inventory and distribution management.

2.2.2.1 Product Management

Reducing variability of supplies plays a significant role in managing the product effectively (Neumann, 2003). Too much product variability is often resulted from too much differentiation among products. This could happen when physicians with well-informed technical knowledge of the product function are likely to overemphasize tiny distinctions among products.

To promote product standardization and decrease variability, developing a strong supply formulary is one avenue (Lee Ventola, 2008). A systematic analysis of product options is vital for creating a supply formulary. All products need to be analyzed based on price, function, usage, safety, and the ability to support high quality patient care. Those with the highest quality and can best fulfill patients, physicians, clinical staff and other end users' demands, as well as those less costly and can yield the best outcomes will be chosen and included in the supply formulary (Franklin, 2003). According to Toba et al. (2008), team consensus on the best and most cost effective products to implement can be achieved through a process named Sourcing and Standards teams. Sourcing and Standards teams consist of clinical experts and sourcing personnel, and are normally held before a new purchase is considered. Lastly, a strong commitment especially from the physicians in creating consistent specifications and procedures for buying supplies is crucial for building an effective supply formulary system.

Carefully assessing suppliers and standardizing hospital supplies can also lead to considerable cost reduction (Reiner, 2005). To address this requires an understanding of what items constitute the whole supply chain spends and whether the hospital has commonalities in supplies that can be consolidated. Better prices can also be leveraged from supplier as a result of their increased volume and spending if supplies standardization and replacement of like