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The Changing Role of Accounting in the Health Care Industry

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Abstract: The aim of this study is to undertake a diagnostic investigation of the changing role of accounting in the health care industry. The health care industry has historically viewed itself as being operationally different from other businesses. Health care industry is a growing industry. For the last century in all countries, the operational cost of health care has steadily risen, usually faster than the consumer price index, absorbing a larger proportion of the Gross National Product (GNP). The purpose of this study is to find out the role of accounting in the health care sector in terms of cost saving and improvement in quality management by an integrated information system. This study helps to suggest solutions or methods that have been used in other similar industries and has introduced the importance of Supply Chain Management (SCM), the role of Information System (IS), latest trend of Electronic health (E-health) and an integrated approach to healthcare Total Quality Management (TQM). Understanding the appropriate performance measurement system for health care processes are essential to implement the most suitable and effective system or method to reduce the escalating operational costs in health care organization.

Key words: Health care, accounting, medical care, logistic management

INTRODUCTION

The health care sector is an organization that provides medical care solution and services to the public. Initially health care institutions, have not attempted to evaluate the value of reducing the operational cost because they were previously reimbursed on a sum, based on their actual cost or annual budget projection. Since the hospitals primarily only treated the indigent population they were forced to seek financial aid from either government agencies or other funding institutions in order to recover all their operational cost. During the nineteenth century, hospitals were transformed clinically and organizationally. New techniques in surgery and medicine reduced infectious diseases among patients and made cures possible. As the patient mix changed and the for profit health care corporations entered the market, funding institutions began to view the health care market and its operational costs differently.

The escalation in medical costs has been the number one issue in health care for almost three decades. The Government and third party players have attempted to reduce the cost of health care by either paying a fixed fee for a procedure or a pre-approved annual budget based on a defined patient mix and census projection.

A technology boom is currently developing which may profoundly change the methods of delivering health care. New information system promises to reduce some costs significantly in the daily hospital procedures. Medical information by way of web-enabled

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technology is quickly replacing the more traditional ways people seek advice and information. Today, quality management of patient care is becoming an integral cost-reduction tool. Health care systems are facing increasing pressure to provide objective evidence of management quality and operational efficiency in their organizations.

The health care industry has become a fast growing industry; therefore accounting is an important part to look into all perspective in order to garner revenue and reduce unnecessary costs that incurred in recent decades. The major problems for accounting in health care industry are as follows:

- Most research in the health care industry has been directed toward different specific supply chain processes but none of the supply chain system has become a benchmark in the health care industry
- There are too many different research approach to the integrated information systems and information technology, which results in confusion while making the final decision
- There is too little research done on an integrated approach in health care Total Quality Management

The objectives of the research are:

- To define the most appropriate and suitable methods to apply in health care Supply Chain Management to minimize the whole supply network costs
- To fully utilize the new era of technology by developing the information systems to enhance the health care systems, daily procedures and administrative processes
- To find out the best approach that promise to both improve management quality and reduce operational costs

The market for delivery of health care services has been steadily moving into private sector or profit organization as part of the global phenomenon. The Health care industry where socialized health care services are predominant are also beginning to realize the potential for increasing the productivity of systems as well as the quality of services provided. In almost every corner of the globe, the realization, like any other, have to make a conscious effort to competitively meet customer requirements. Unless the customer is satisfied that he/she has been conveniently provided with quality care at reasonable cost and risk of adverse outcomes have been minimized, health care organizations run the risk of going out of business sooner rather than later. The main focus of this study is to find out the different aspects that can help to reduce or improve the health care operational costs.

MATERIALS AND METHODS

The literature on accounting in health care industry covers a number of themes. Many researches have been carried out and many titles and articles have been provided regarding to how to reduce the escalating medical costs and improve quality management. Four issues would be extracted from these articles; (1) logistic and supply chain management in the health care industry, (2) information systems and information technology in the health care industry, (3) electronic health a new era to improve accounting in health care industry and (4) total quality management in health care industry.

Logistic and Supply Chain Management in the Health Care Industry

Jarrett (1998), stated that the health care industry has been under extreme political and public pressure during last three decades to control the rapidly increasing cost for treatment. One of the main issues is the inefficient and ineffective health care supply chain management. The health care industry incurs a tremendous amount of cost from the receiving, handling and distribution of its products. Health care supply chain has slowly changed from mass to focused marketing where flexibility is essential and facilities must in the future concentrate on a single integrated supply chain. The extension of the supply chain must involve targeting the marketplace, achieving economies of scale and integrating national logistics information flows (Seetharaman *et al*., 2006a).

Based on the survey of literature, there are a few systems in the supply chain management that strongly recommend looking into the similarity that may be applied to the health care industry.

Just-In-Time (JIT) system is widely and successfully implemented primarily in the manufacturing, distribution and transportation industries (Seetharaman *et al*., 2007). These industries share many similar business processes with health care industry especially in the areas of supply distribution, inventory control and product production. Whitson (1997) said that Just-In-Time concepts can be applied in a service environment and examines the part it can play in US hospitals. By establishing the right relationships with materials and pharmaceutical suppliers means deliveries can be made on a JIT basis.

JIT manufacturing, a widely used technique in Japan, is exactly opposite to the approach traditionally practiced in the health care industry, which is to order and store large quantities of products at one time. JIT attempts to minimize inventory costs by receiving a supply of raw products from the vendor just in time for the production run. JIT is the essence of fluid, fast and efficient customer service (Dixon, 1997). In its most basic form, JIT is producing the required supplies, at the right quality and in the exact quantities, precisely as they are needed. One of the goals of JIT is zero inventory, not only just in time but just enough. In the care of patients, the provider cannot accurately predict the exact products or volume of products that will be needed on a daily basis. Therefore, the JIT system will have to allow for a limited buffer stock of one or two days and providers must agree to approve product substitution in the event of a manufacturer backlog. Even in this expanded version on JIT, the supplier must deliver defect-free-items.

JIT system improves the companies competitive advantage through flexibility, quality and reduced lead-time, by lowering inventory costs, reducing the asset base and therefore decreasing cost of sales or services. One reason that most health care providers give for not implementing JIT is that their production capacity and scheduling cannot always be predicted. Many companies in other industries also have difficulty scheduling production outputs and have adapted some flexible techniques in order to accomplish JIT. The successful implementation of JIT within logistic channels requires an efficient production and distribution process and there are significant differences in the view of JIT as held by logistics executives and manufacturing executives (Spencer *et al*., 1994). There is a common understanding that quality is not just the responsibility of production and JIT can improve the overall quality of the organization.

Another health care supply chain snag is lack of adoption of technology such as bar-coding and electronic data interchange. Electronic Health Care Requisitioning (EHCR), which is implemented in the USA by the Clinton's administration, incorporates a vision of having the right product in the right place at the right time in the most cost effective manner to serve efficiently the health care needs of the end consumer. Creedon (2006) mentions that the EHCR goals include:

- 95% electronic transactions
- 100% invoice accuracy
- 80% inventory reduction
- 99% service levels/fill rates
- Product stopping points
- Cutting material handling staffing by 50%

EHCR incorporated three strategies. First, efficient product movement, which produced an overall supply-chain saving of $6.7 billion from effective inventory management strategies hinging on automation. Second, efficient order management contributed a saving of $1.7 billion through easier contract negotiation and product purchase. Third, by using Electronic Data Interchange and bar coding to speed up transactions and errors cutting, $2.6 billion was achieved in savings.

Vendor-Managed Inventory (VMI) is the golden method that is widely used in retail supply network. VMI is an integrated approach for customer-supplier co-ordination, according to which the supplier decides on the appropriate inventory levels of each product (within previously agreed upon bounds) and on the inventory policies to maintain these levels. VMI requires that suppliers monitor the buyer's inventory level and, according to sales forecasts, make periodic replenishments, deciding order quantities, shipping and timing (Waller *et al*., 1999). The buyer can sometimes even transfer financial responsibility for the inventory to the supplier.

The benefits of the VMI have been clear since the adoption of the approach in the first implementation cases. VMI was popularized in the late 1980s by Wal-Mart and Procter and to be Gamble and became one of the key programmes in the grocery industry's pursuit of efficient consumer response and the garment industry's Quick response (Danese, 2006). Some of the advantages of VMI implementation are:

- Reduction in customer demand uncertainty
- Reduction of inventory level
- Reduction of stock out number and frequency
- More flexibility in production planning and distribution
- Improvement in customer services

Although, there are a lot of benefits to be derived from the implementation of VMI but VMI has not yet become a standard mode of operation in health care industry. Information exchanges are often limited to price, quantity, mix and due date. Among the main implementation problems, there are the presence of contrasting goals among supply network members, the reluctance of companies to share confidential data/information and the need to involve supply network members through an incentive system to avoid opportunistic behaviors (Smichi-Levi and Kaminsky, 2000).

Information System and Information Technology in the Health Care Industry

A technology boom is currently developing which may profoundly change the methods of delivering health care. New information system promise to reduce some costs significantly in the daily hospital procedures. With the development of broad-band, high capacity communication system for quickly transmitting large volumes of information-a capacity which will allow some services to be delivered remotely to patient's home (Russon, 1997). A system can be developed to eliminate a substantial number of home visits. For example,

monitoring a patient's health remotely from a home care agency or a hospital unit. Computers can also monitor self-care and notify the monitoring agency when a patient has not completed the necessary requirements.

Hand-held computers are used to automate the documentation process and have significantly reduced the work required to meet the requirements for reimbursement. Hand-held computers store documentation electronically, a much more dynamic form than paper records. Electronic patient care data is much easier to access and manipulate and the ability to quickly and efficiently consult and analyze information about a single patient or an entire population offers valuable benefits for patient care (Williams *et al*., 2002). Maintaining home care records electronically can also benefit the health care system as a whole. Clinical information can be shared with hospitals quickly and easily, presenting an opportunity for both partners to save money while constructing a more complete and useful records of health care within the continuum.

The health care industry is grasping the need to use IT and telecommunications with e-commerce strategies for improved cost-effective services to its key stakeholders. E-commerce practices are introduced into health care sector with medical suppliers and automating pharmaceutical to hospitals and retail pharmacies. Supply chain communication is facilitated by an internet-based platform, allowing more efficient interaction between the pharmaceutical and health care product industry's outlet, wholesalers, suppliers and manufacturers. Model warehousing and retail systems such as databases, bar-cording and having suppliers and customers linked electronically, numbering systems for products and in electronic distribution of orders by wholesalers and acknowledgment by manufacturers, using common available Internet-based software are the basic changes to start e-commerce. The major advantages for e-commerce are to reduce wastage in health care industry through improvements to Supply Chain Management; better-cost management enabling improved overall patient health care delivery (Millard, 2003).

The Pharmaceutical Extranet Gateway (PEG) is one of the successful systems that provide a single common electronic ordering system that allows pharmaceutical wholesalers and suppliers to transact business through the Internet with the use of common bar coding or standardized numbering system. It offers precision in processing, advanced delivery notification, streamlined payments and accurate and timely shared business information. By ensuring secure encryption, documents can be tracked through the system. Analysts estimate that the cost in placing an order through the normal manual process would be around $50 to $70 and with the implementation of PEG, the transaction cost is expected to reduce to paltry $2-5 per order.

The Information System/Information technologies have played a central role in enabling organization across many industry segments to address many business challenges and achieve a level of sustainable competitive advantage (Fadlalla and Wickramsinghe, 2004). The adoption and adapting of technologies and new techniques throughout the health care industry appears to be the way not only to stem the escalating costs currently facing this industry but also to provide a means to address other challenges such as poor quality in health care management.

The implementation of a web-based connectivity is one way in which health care payers and providers can address administrative waste (Gordon 2005). Administrative waste caused partly by a backlog of paper, phone and fax transaction in health care organizations, is costing the healthcare industry up to $100 billion year^{-1}. Web-based connectivity solutions, which link payers with their affiliated providers via the web and allow them to execute administrative transactions automatically in real time, are streamlining healthcare processes

across the nation. The benefits of web-based connectivity are the same for payers and providers alike: time and money saved by moving administrative transaction to the web and also improve payers and providers satisfaction.

For example, the providers in having a web-based connectivity with payers means that nearly all the standard enquiries can be answered online, enabling their staff to spend less time on the phone and more time on other priorities such as patient care. It also gives practices more control over administrative activities by providing accurate, up-to-date information on claims status and payment. This means providers can garner revenue from outstanding claim that have either been denied or not paid in full. By leveraging a payer-neutral platform, payers can enable providers to interact with multiple health plans via a single point of access, with one username and password. This approach can maximize the number of transactions processed and facilitate provider participation.

Electronic Health a New Era to Improve Accounting in the Health Care Industry

Internet-based health care is the application of information and communications technologies across the whole range of healthcare functions. Medical information by way of web-enabled technology is quickly replacing the more traditional ways people seek advice and information (Smith and Manna, 2004). The same advice can be dispensed by way of the Internet in the comfort and privacy at consumers' home. Some e-medicine web sites are peer reviewed in terms of content material and reading level of potential users. These medical web sites are designed, not to replace the health care provider, but rather to be an aid to the understanding of potential service and to the making of informed decisions.

E-health covers everything from electronic prescriptions and computerized medical records by using new systems and services that cut waiting times and reduce data errors. Internet benefit management promises to simplify and reduce costs for employers and bring more choice and control. E-health facilitates primary and community care and provides information on which conditions require immediate emergency treatment via virtual clinics (Gonzalez *et al*., 2006).

A key advantage of the e-health system is the use of Internet communications to improve the outreach of healthcare while reducing the number of face-to-face transactions. The use of such technologies can make health care more accessible and convenient to patient and provide access to geographically disperse populations. E-health can improve medical and administrative information and also reduce the overall cost of health care (Gonzalez *et al*., 2006). The implementation of an E-health consistent system includes functions such as booking doctor appointments via Internet, e-prescriptions, telemedicine, administrative functions and access to medical history documentation. The benefits also include enhanced access to information and resources, empowerment of patient to make informed health care decision, streamlined organizational processes and transactions and improve quality, value and rising patient satisfaction.

However, one of the major concerns is the ethical standards of clinicians practicing on the web are generally unknown. The reliability and accuracy of information on the Internet may be questionable and at time, incorrect and misleading (Ismail *et al*., 2007).

Health information of a poor quality can easily lead to individuals inadvertently causing harm to themselves or their family (Webster and Williams, 2005). In essence, medical information dispensed over the Internet is under-regulated, if at all. One viable solution is to enact standards and regulation to protect consumers from unethical clinicians, inaccurate information and unauthorized third-party use of confidential information. An acceptable code of standards and ethics can also increase customer loyalty and trust (Smith and Manna, 2004). The strategic success of e-health, e-medicine and digital health care is a matter of trust.

Total Quality Management (TQM) in Health Care Industry

Health care is a growing industry. Health care systems are facing increasing pressure to provide objective evidence of the quality and efficiency of their organizations. Health care manager and medical professionals who traditionally have concentrated on the quality of care are forced to review their overall management practices for cost effectiveness. In the final report compiled by the Committee on the Quality of Healthcare in America (CQHCA, 2001), it was noted that improving patient care is integrally linked to providing high quality healthcare. Furthermore, in order to achieve a high quality of healthcare the committee identified six key aims:

- **Healthcare should be safe:** Avoiding injuries to patients from the care that is intended to help them
- **Effective:** Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those who will not benefit (i.e., avoiding under use and overuse)
- **Patient-centered:** Providing care that is respectful of and responsive to individual patient preferences, needs and values and ensuring that patient values guide all clinical decisions
- **Timely:** Reducing waiting and sometimes harmful delays for both those receiving care and those who give care
- **Efficient:** Avoiding waste
- **Equitable:** Providing care that does not vary in quality based on personal characteristics

Most of the poor quality connected with healthcare is related to a highly fragmented delivery system that lacks even rudimentary clinical information capabilities resulting in inadequate information flows and poorly designed care processes characterized by unnecessary duplication of services, long waiting times and delays (Fadlalla and Wickramsinghe, 2004).

In the 1980s, some Japanese companies adopted the novel strategy of using time as a source of competitive advantage. It became known as Time-Based Competition (TBC), which generated a set of principles labeled Time-Based Management. By reducing unproductive time, organizations were able to reduce costs, improve quality and stay close to their customers (Stalk, 1988).

A patient episode is analogous to a customer order-to-delivery chain in industry. The effective application of Time-Based Competition (TBC) and Work in Process (WIP) can be achieved by focusing on throughput time of a patient episode by reducing the non-value adding time components and by minimizing time categories that are main cost drivers for all stakeholders.

Analogously to the WIP measure in manufacturing, in health Patient In Process (PIP) concept is suggested. The focus and unit of analysis in studying PIP should be a patient episode. It suggests going beyond the general aim of decreasing lead times and to focus on those patient processes where a decrease in lead times have the maximum impact on process efficiency and effectiveness. Health care organizations should define areas in which time can be the most important cost driver.

Patient in process creates significant costs for hospitals that are involved and impacted by patient episodes. Direct inventory costs in a healthcare context include the use of hospital beds and other resources. Hospital beds have been recognized as one of the key cost drivers and it is also one of the main bottlenecks limiting throughput of health care production

systems. Extra waiting time is generally non-value adding time, during which resources are not used to improve a patient's medical condition. These costs are a burden to the hospital in the form of additional medical work or to external stakeholders, such as social services who provide assistance for a disabled patient who is waiting for a medical procedure. It can be concluded that the use of PIP concept for practical management would require integrated information system, which automatically keep track on patient flow in the hospital and enables report deviation in individual patient episodes to recommend patient processes. (Kulaja *et al*., 2006).

These days, quality management of patient care is becoming an integral cost-reduction tool. In particular, some organization have started to explore Care-Based Cost Management (CBCM), an approach that focuses on obtaining greatest efficiencies by improving the management of processes in patient care, complication and social issues (Davis *et al*., 2004). One large community hospital that employed this approach was able to lower its average length of stay to 4.8 days, achieve profits and operating margin of 90% in comparably sized facilities and add $7.5 million to its bottom line through improved documentation, reduced mortality and decreased readmission rate for specific large-volume diagnoses.

Care-Based Cost Management is an innovative organizational management approach that provides a structure for addressing clinical quality as a core business principle. Unlike traditional financial-based cost management, CBCM focuses improvement efforts on patient care rather than on limiting cost in areas such as personnel, equipment, supplies, physical plant and information system. By focusing on improving care processes and documentation, preventing complications, addressing social issues, providers can achieve improved outcomes and more closely match payment to services provided, thereby improving financial performance (Davis *et al*., 2004).

Total Quality Management (TQM) is one approach that can improve both quality and reduce costs (Seetharaman *et al*., 2006b).

Patients are expecting more from health care and are increasingly dissatisfied with long waiting time and the way they are treated, especially the post-war generation. For example, the common aspects of poor quality are: long waiting times, lost X-ray pictures and records, poor service attitudes towards patients, blame-shifting between departments, employees and/or doctors inefficiencies. Those paying for health care ask why health services cannot use quality methods, which are used in some other industries to reduce the rising costs of health care (Ovretveit, 2000). Outside of health care, quality is defined as exceeding customer expectations. In applying TQM in health care, many have viewed customer satisfaction as one of three dimensions of quality:

- **Patient quality:** Whether the service gives patients what they want
- **Professional quality:** Professionals' views of whether the service meet patients' needs as assessed by professionals (outcome is one measure) and whether personnel correctly select and carry out procedures, which are believed to be necessary to meet patients', needs
- **Management quality:** The most efficient and productive use of resource to meet client needs, without waste and within limits and directives set by higher authorities

TQM and CQI (Continuous Quality Improvement) have emerged as an approach to improve quality, which may be more cost effective than other approaches (Dey and Hariharan, 2006). Two definitions distinguish TQM from other approaches. One is that TQM is, A comprehensive strategy of organizational and attitude change, for enabling personnel

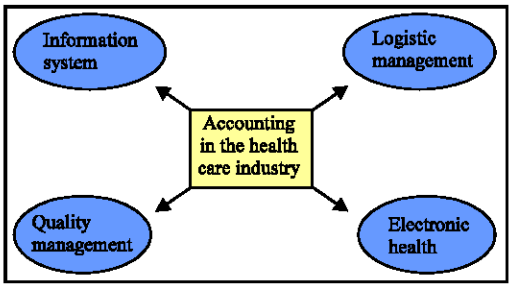

Fig. 1: Research methodology

to learn and use quality methods, in order to reduce costs and meet the requirements of patients and other customers (Ovretveit, 1997). A second definition given by US theorists emphasizes that TQM is a management method: TQM/CQI is simultaneously two things: a management philosophy and a management method.

Research Methodology

Supply chain management, information systems, electronic health and total quality management are broadly mentioned in different sources in different industries. Online resources such as MMU digital library including online database for EMERALD, EBSCO, Proquest, Google search engine, related textbooks, articles and software development websites have also been used during this study. The research framework is shown in the Fig. 1.

RESULTS AND DISCUSSION

Many health care providers today understand that they must relentlessly innovate, upgrade and improve their output to stay competitive. In order to develop a competitive strategy, the word flexibility takes on a new meaning. All operational and support systems must be evaluated and redesigned to produce maximum production and cost efficiency. Controlling health care costs requires that limits be placed either on prices, quantities of services, or both. Price is measurable and more easily controlled than is quantity and quality patient care. Market-oriented approaches to control health care costs offer less certainty about the outcomes that would be achieved, as there is little experience from which to predict the effects on prices and how these effects would differ across patients, regions and providers.

Health care is noted for using leading edge technology and embracing new scientific discovery to enable better cures for diseases and better means to enable early detection of most life threatening diseases. However, the health care industry has been extremely slow to adopt technologies that focus on better practice management and administration needs. Information technologies are like a backbone for other cost saving methods that are discussed in this study. For instance, information technology is an enabler for VMI. In fact Decision Support Systems, EDI, or Internet are often associated with VMI.

While implementing new technology or processes with providers, health providers have learned a hard lesson-they must provide tools that do not interfere with the daily practice workflow or add administrative complexity, but that offer practical value to providers and their office staff. Health Care Information System (HCIS) can be used to most effectively and

efficiently facilitate the information flows and decision making throughout the health care system web. Hence, the HCIS and in particular the information product will be better suited to help health care organizations cope with the complex and challenging environment with which they are currently faced.

E-mail health information services can be used appropriately to provide general health information. The major problem with E-mail requests for health information is that the medium is not suitable for personal medical advice without a full examination but consumers either ignore or do not understand this limitation.

Although, the contemporary performance measurement and quality improvement models in health care identify quality issue and suggest improvements, it lacks a uniform and integrated framework for quality improvement projects. As a response to customers' demand, many health care organizations are attempting to adopt a TQM philosophy and a customer orientation strategy. Eighty percent of Singapore hospitals have adopted some aspects of management quality practices as a response to customers' demand. However, an empirical study conducted on patients' expectations and perceptions on Singapore hospitals' service quality revealed that service quality is generally below patients' expectations. Furthermore, 40% of the respondents have rated the service quality poor or very poor. Successful implementation of a total quality management tool is not easy as has been demonstrated by the number of failed attempts in a variety of organizations. Moreover, leaders need to have the required knowledge, expertise and skills before they can agree to embark upon an implementation programme. In addition, leaders need to learn from others as to what has worked in health care and what has not.

Limitation

There is no one golden standard or benchmark in cost saving management in the health care industry. Health care managers have to understand their organizational systems and processes in order to find out the best suitable management method to apply in their daily procedures. Unfortunately, there are some areas that are not covered in this study such as limitations and challenges in the health care industry.

CONCLUSIONS

The health care industry is currently facing constant and relentless pressure to satisfy conflicting goals such as lower cost while maintaining and increasing the quality of services. In 2003, health care costs grew at a rate of six-times he inflation rate. This was not an isolated increase but represented a multi-year trend of health care prices rising at multiples of inflation over most of the last decade. The purpose of this study was to provide an insight in managing costs effectively in four different aspects, which are focus on supply chain management for stock replenishment system, fully utilize the information systems to reduce unnecessary wastage and improve quality information within the internal and external organization, the use of electronic health helps to eliminate non-value adding processes and transaction errors and last but not the least, is to implement total quality management in health care industry to improve the whole organization quality and reduce costs. By looking at this four major issues that help to manage costs effectiveness, it is not difficult to notice that information technologies are the common foundation to achieve successful implementation and outcomes. However, the health care industry has been extremely slow to adopt technology that focus on better practice management and administration needs. In supporting the decision making that take place when addressing problem with delivery of

care, its management and any associated information systems development is necessary to accommodate any approach or methodology. Accounting in health care industry needs further research and continuing development to discuss best practice in cost efficiency and quality improvement. It is interesting to note that had indicated that recent polls conducted in the USA indicate that:

- Twenty four percent said that they feared losing health care coverage in the next year
- Nearly 25% said that they or a family member delayed seeing a doctor in the past year because of what it might cost
- Forty six percent of those polled worried they would not be able to afford health care in the future
- In February 2009, the government estimated that health care costs would average $8,160 for every man, woman and child in theUS-an increase of $356 per person from 2008
- Surveys show that an overwhelming 86% of Americans believe health reforms is an important part of addressing the nation's economic crisis
- It is estimated that nearly 50 million Americans are uninsured

REFERENCES

Creedon, C., 2006. Save time and money with supply chain automation. Mater. Manage. Health Care, 15: 37-38.

CQHCA, 2001. Crossing the Quality Chasm: A New Health System for the 21st Century. CQHCA., Institute of Medicine, Washington.

Danese, P., 2006. The extended VMI for coordinating the whole supply network. J. Manuf. Technol. Manage., 17: 888-907.

Davis, K., R. Otwell and J. Barber, 2004. Managing costs through clinical quality improvement. Healthcare Fin. Manage., 58: 76-84.

Dey, P.K. and S. Hariharan, 2006. Integrated approach to healthcare quality management: A case study. TQM Magazine, 18: 583-605.

Dixon, L., 1997. JIT 11: Creating the ultimate customer/supplier partnership. 82nd Annual International Conference of the Institute of Supply Management.

Fadlalla, A. and N. Wickramsinghe, 2004. An integrative framework for HIPAA-compliantI IQ healthcare information system. Int. J. Health Care Qual. Assurance, 17: 65-74.

Gonzalez, M.E., G. Quesada, I. Urrutia and J.V. Gavidia, 2006. Conceptual design of an e-health strategy for the Spanish health care system. Int. J. Health Care Qual. Assurance Inc. Leadersh Health Serv., 19: 146-157.

Gordon, J.R., 2005. Capturing the benefits of web-based connectivity. Healthcare Financial Manage., 59: 78-82.

Ismail, M., A. Seetharaman and Y.B. Foo, 2007. The pitfalls of internet financial reporting and their prevention. J. 21st Century Accounting, 17: 1-19.

Jarrett, P.G., 1998. Logistic in the health care industry. Int. J. Phys. Distribution Logistics Manage., 28: 741-772.

Kulaja, J., P. Lillrank, V. Kronstrom and A. Peltokorpi, 2006. Time-based management of Patient processes. J. Health Org. Manage., 20: 512-524.

Millard, E., 2003. Broadband nation. August 9, E-Business Special Report. https://www.technewsworld.com/story/31299.html.

Ovretveit, J., 1997. What are the best strategies for ensuring quality in hospitals. Health Econ., 6: 109-116.

Ovretveit, J., 2000. Total quality management in European healthcare. Int. J. Health Care Qual. Assurance, 13: 74-79.

Russon, N., 1997. Linking the health care continuum with technology. Assurance Incorporating Leadership Health Services, 10: 7-9.

Seetharaman, A., T. Subramanian, G. Marthandan and C.Y. Joo, 2006a. The integration of ERP with SCM and CRM applications and data integrity in ERP. J. Electronic Inform. Plann., 33: 117-132.

Seetharaman, A., J. Sreenivasan and L. Boon, 2006b. Critical success factors of total quality management. Qual. Quantity, 40: 675-695.

Seetharaman, A., J. Sreenivasan, R. Bathamenadan and R. Sudha, 2007. The impact of just-in-time on costing. Int. J. Manage. Enterprise Deve., 4: 635-661.

Smichi-Levi. D. and P. Kaminsky, 2000. Designing and Managing the Supply Chain: Concepts and Strategies and Cases. McGraw Hill, New York.

Smith, A.D. and D.R. Manna, 2004. Exploring the trust factor in e-medicine. Online Inform. Rev., 28: 346-355.

Spencer, M.S., D.S. Rogers and P.J. Daugherty, 1994. Just-in-time systems and external logistics suppliers. Int. J. Operation Prod. Manage., 14: 60-75.

Stalk, Jr. G., 1988. Time the next source of competitive advantage. Harvard Business Rev., 66: 41-51.

Waller, M., M.E. Johnson and T. Davis, 1999. Vendor managed inventory in the retail supply chain. J. Bus. Logistics, 20: 183-203.

Webster, R. and P. Williams, 2005. An evaluation of the NHS Direct online health information e-mail enquiry service. Aslib Proc. New Inform. Perspectives, 57: 48-62.

Whitson, D., 1997. Applying just-in-time systems in health care. IIE Solutions, 29: 32-37.

Williams, P., D. Nicholas, P. Huntington and B. Gunter, 2002. Doc.com: Reviewing the literature on remote health information provision. Aslib Proc., 54: 127-141.