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The Role of Knowledge Management in the Healthcare Sector

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Introduction

The new millennium will be dominated by intellectual capital. In a competitive world, knowledge is an important economic resource that adds value to the manufacturing process. The health care sector across the global is under going a cultural transformation, as the traditional passive and respectful patient population is replaced by an assertive group of customers .as the educated and informed consumer moves through the health care system and beings to use more services, he /she is demanding information and choice, engaging in self-care and self-management of diseases, and asserting a voice in making healthcare decision with providers. The proliferation of clinical data, outcomes management, provider information and pricing transparency will allow consumers to responsible for their own destinies in a historically anti-consumer healthcare system. In fact, patient will be required to bear some of the burden of their own care as defined contribution or defined care models will be place more portability, choice and responsibility in the hands of consumers. This trend which began in the more 'developed' and 'aware' economies of the west has rapidly moved east as developing middle east countries seek newer models to deliver health care to their teeming population.

Healthcare Trends:

A study of global healthcare trend (1) undertaken by **Andersen** reveals certain interesting developments that are steering the consumer movement in healthcare today Knowledge is Power Consumers today have an insatiable appetite for health information. More than 17,000 health care web sites

exist and increasing numbers are searching the net for health care information.

- Doctor-patient relationships are enriched and customer service is more efficient as communication via e-mail and the Internet takes off (e.g., health evaluations and online medical histories).
- Healthcare is falling in step with the retail industry, in which a customer receives information about a product before buying it. Today's healthcare customers seek access to reputation, price and quality of care before receiving services.
- Healthcare will experience increased scrutiny from patients who are becoming aware of the extent of deaths caused by medical errors.
- Privacy and security of health information in the wake of increased information flow is becoming a paramount concern.

Alternative and Complementary Medicine

- Healthcare is focussing increasingly on health and wellness, not illness. Self-care is on the rise as consumers seek various treatment options including alternative and/or complementary medicine.
- Hospitals are increasingly using procedures such as *Yoga* and *aromatherapy* to attract patients.

Demographics

As the demographic pattern of society undergoes change, there is a greater need for products, services and information relevant to ethnic, age and income/ education groups. One size does not fit all in consumer-driven healthcare.

Paying for Healthcare

- Many employers want to get out of providing healthcare benefits and shift responsibility for healthcare costs to the consumer through financing vehicles.
- There is a need for consumer-focussed finance models with increased customer participation, digital marketplaces, and technology to promote alternative payment methods.
- Medical technologies will drive up health costs that will be passed on to consumers.
- Patients are paying more and expecting more. This could promote a two-tiered system - one for the rich and one for the poor (who have less education and less influence over their care).

Faced with these pressures coupled with growing medical delivery costs, healthcare organisations are searching for creative ways to adapt to the changing environment, generate revenues at lower delivery costs creating long-term sustainable value. Future value creation measures will focus on preventive treatment for patients at risk for costly, chronic conditions through disease management programs. Information technology will be a critical ally for frugal healthcare organisations. The key seems to lie in the ability of organisations to bring diverse competencies in a coherent and meaningful configuration and build mechanisms to leverage them.

Emerging Organizational Model

Andersen's study of organizations worldwide, within and outside the healthcare sector, shows the trend towards the creation of new models to create sustainable value². These new models are being built on the economic and social power of intangibles – relationships, knowledge, and intellectual property – that are multiplied by the effects of the networked global economy. The basic components of value are shared by every enterprise, but it is the unique combinations and proportions of a company's asset portfolio that make up a business model and ultimately determine economic value and success, no matter what the industry.

Traditionally, the approach to configuring businesses to create value has focussed on financial assets. In the emerging economy, organizations are creating value in completely new ways. The challenge that organizations now face in the new environment is how to identify and leverage all sources of value, not just the assets that appear on the traditional balance

sheet. These important assets - including customers, suppliers, employees and ideas – are at the core of creating a successful business now and in the future. Equally importantly, it is not merely the portfolio of assets that is important, but also the way they interact with one another.

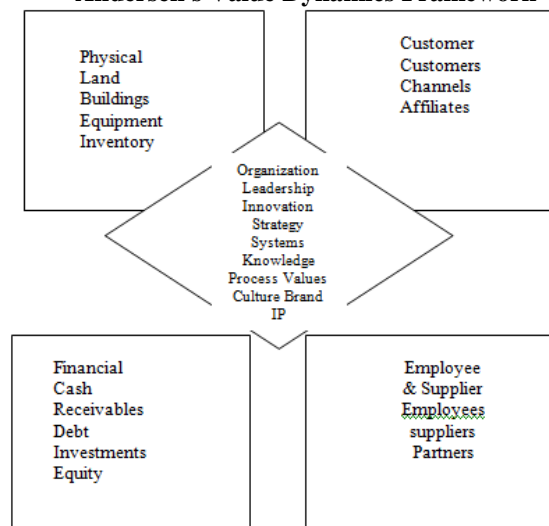
Physical assets are tangible assets that are accounted for in a company's balance sheet. Financial assets include cash, receivables, investments, and relationships with providers of debt and equity. While these aren't the only financial assets, they are amongst the most significant in defining an organization's financial status, its credit and investment worthiness, and its overall ability to attract funds. By leveraging financial assets to generate opportunities in other areas of its business, an organization has the ability to use its financial weight to create value.

Employee and supplier assets, part of the inbound value chain, take the organization into the creation of intangible value. Each of the components in the employee and supplier asset category is considered a partner in producing products and services.

Customer assets include a company's channels and market affiliates, each a vital link in the chain that runs from the manufacturer of a good or service to its ultimate customer.

Organisation assets include all structural and intellectual assets, including leadership, strategy, culture and values, systems, processes, the capacity to innovate, brands, and proprietary knowledge. They are largely intangible assets, though some can be codified or afforded legal protection with trademarks and patents. Identifying and leveraging organisation assets is the most important element in building a successful business for the New Economy.

Andersen's Value Dynamics Framework



Traditionally the healthcare value chain has comprised a disparate collection of hospitals, doctors, patients, professionals, and pharmaceutical companies. Each element of this chain operated fairly independent of another. This model worked fine as long as healthcare provision was perceived solely as a personalised service provided through a unique relationship and transaction between the doctor and the patient. The doctor was privy to the knowledge generated by this transaction with no need being felt to share with any other member of the chain. Healthcare providers created the assets with contractual arrangements with the doctors or physicians on the use of the physical infrastructure. With the emphasis on the utilization of physical assets this model has not helped the sector effectively capture and use the knowledge that gets created within these assets. Whatever data is captured by the system is largely financial and for administrative uses. In any case the model by the creation of compartments between the players does not facilitate sharing across the value chain.

However, as healthcare service begins to look more like a commodity, this model needs to undergo a paradigm shift. No longer can the sector operate in individual silos; rather it needs to look at mechanisms that integrate all the players. As the sector commences its difficult search for a business model that gives it a sustainable advantage the one resource that underlies this model is assuming significant proportions. With the increasing realization that assets by themselves will no longer be the sole market differentiators, knowledge residing in the sector across players is increasingly emerging as the critical organisational capability. Organisations are seeking newer ways to leverage knowledge to achieve operational efficiency, customer satisfaction and employee retention.

In 1996, teams of leading heart surgeons from five New England medical centers observed one another's operating room practices and exchanged ideas about the most effective techniques in a collaborative learning experiment. The result was a 24% drop in the mortality rates for coronary bypass surgery or seventy-four fewer deaths than predicted. The group developed an infrastructure that helped them share and learn from each other's practices³.

Private Group of Hospitals has done similar work in the area of cardiac surgery. The documentation of practices of leading surgeons has helped the Group products a complex surgical process. This has helped the group transform a process into a product that can be marketed like in any other industry.

Tele-medicine, the means of bringing medical expertise to remote areas hitherto left out of the delivery process, is another step in this direction. This infrastructure enables doctors and practitioners spatially separated to share expertise and experience.

The net offers another channel to enable various members of the healthcare chain to interface with one another and leverage knowledge resident within the system. Healthcare web sites enable the creation of private communities (physician-, physician-patient, patient-healthcare service providers, etc) to facilitate the sharing of knowledge.

The sector's approach to leveraging knowledge has historically been piecemeal. Knowledge continues to be viewed in silos with the absence of an enabling culture that fosters sharing across the members. The healthcare enterprise is still viewed as comprising players who broadly fall into four categories. The first comprises doctors and physicians, the second, healthcare providers, the third, patients, and the fourth, others including organisations like pharmaceutical companies and other vendors. The relationship between these four groups in respect of sharing knowledge both across and within the groups has at best been tenuous. This categorisation has also extended to the process of healthcare delivery, with the process fragmented and largely compartmentalized. The absence of a holistic view has implied that the sector as a whole has not had the benefit of learning from each other for the improvement of the overall process.

This narrow approach to the delivery process has been extended to the use of information technology to support any process of knowledge management.

Several organisations in the sector have made significant investments in information systems including computerized patient records. Evidence on the success of these systems has been mixed; with the one certainty being that there is considerable trepidation among potential purchasers and most physicians continuing to be paper-based with office automation primarily limited to management functions⁴. The sector continues to be one of the least automated; ironically it is possibly one of the most information intensive. This is particularly so in the ambulatory sector where significant opportunities exist to enable medical management, optimising health delivery and resource utilisation.

The problem of knowledge management in the sector has been at an even more basic level of knowledge capture. The process of capturing the basic clinical data has been affected by this fragmentation. Much of

it has been looked upon as being administrative; resisted doctors and professionals. In one of the healthcare providers the author consulted, the implementation of an enterprise-wide information system was held up for upwards for a year as physicians resisted direct data entry. Many healthcare providers found a way out of this through the extensive use of medical transcription, an industry that suddenly grew in the last few years of the last decade. While this solved the problem to some extent, the focus was more on assisting physicians complete the paper work related to delivery rather than using the data to improve the process. Any possible use of this data for the purpose of knowledge management was further constrained by the absence of the widespread use of standard codes and protocols for diseases within the sector.

Another factor that has impacted knowledge management within the sector and which has assumed prominence in recent years is one of privacy of patient information. As the clamour to capture patient information increased through the increasing use of IT, the fear of the possible misuse of patient data impacted the spread.

As healthcare organisations begin the difficult task of reinventing themselves to adapt to a changing environment, there is an increasing realisation that knowledge resident within them needs to be adequately leveraged.

They will need to move away from capturing 'knowledge' for merely administrative and billing purposes to one where 'knowledge' plays a more meaningful role within the overall strategy of creating long term value through enhanced customer satisfaction and increased operational efficiencies. This calls for a new way of looking at the business of healthcare.

Strategies[edit]Knowledge may be accessed at three stages: before, during, or after KM-related activities. Different organizations have tried various knowledge capture incentives, including making content submission mandatory and incorporating rewards into performance measurement plans. Considerable controversy exists over whether incentives work or not in this field and no consensus has emerged.

One strategy to KM involves actively managing knowledge (push strategy). In such an instance, individuals strive to explicitly encode their knowledge into a shared knowledge repository, such as a database, as well as retrieving knowledge they need that other individuals have provided to the

repository. This is also commonly known as the Codification approach to KM.

Another strategy to KM involves individuals making knowledge requests of experts associated with a particular subject on an ad hoc basis (pull strategy). In such an instance, expert individual(s) can provide their insights to the particular person or people needing this. This is also commonly known as the Personalisation approach to KM.

Enterprise-wide KM System

Exhibit 2 illustrates a conceptual framework for an enterprisewide knowledge management system. This model is an open system that integrates the various players in the healthcare value chain (it is conceptually similar to the various solutions being offered by various vendors). This enables viewing the entire chain as one integrated enterprise and enables the capture and sharing of data across the virtual healthcare enterprise.

- The model is built around the basic transaction between the doctor and the physician. It focusses on capturing basic information across the chain on the transaction that takes place between the patient and the physician, i.e. what the patient entered the system with, what happened, how did the transaction evolve or the process of delivery and at what cost.
- The system aims at capturing longitudinal data on the process of disease management. This provides the enterprise insight into disease management facilitating the design of newer ways of delivery.
- The model facilitates the separation of recurrent tasks (administrative activities) from those that need specialised expertise and experience resident in the trained members of the value chain.
- This enables various members of the chain to focus on their respective core competencies leading to greater specialisation and efficiencies in the system.
- The model provides for greater transparency of the delivery process while yet retaining the privacy of patient data.

At the centre of the model is the transaction that generates data that underlies the healthcare delivery system. Patient data can be categorised into the general demographic data and those that relate to specific illness and the clinical advice provided to the patient. Most providers currently capture the first type of data though one could argue on the use that is

made of such data. The lacuna has essentially been one of integrating this to the data that gets generated through the physician-patient transaction. Work being undertaken to develop a unified standard of disease codification can prove a key enabler in the accurate capture of patient data.

This segregation of patient data depending on where it gets captured also does away with the resistance that many hospitals face with doctors being reluctant to enter patient data. In this model, the physician focusses on capturing data solely on the clinical side of the transaction. As the patient moves through the delivery process, the system captures clinical information on the diagnosis, severity of condition, treatment provided, patient response and post treatment recovery.

Exhibit 2

The key element of the model is not just with the capture of data but the use that the system makes of this data. The data actually resides in a warehouse that is integrated to the various players in the healthcare chain, the potential users of this data. An intelligence layer that sits on the warehouse provides users the necessary mining facilities with requisite security. For instance, patients can use this information to track the receipt of service assured of the security of their privacy, while pharmaceutical companies can use the live data for clinical trials for a price nevertheless.

Providers can use the data to track and enhance their operational efficiencies.

Possibly the most critical use of this data is the sharing of medical and clinical practices across the medical community. Similar patient groups, corrected for demographic and cultural nuances can be used for developing best practices in the medical profession. This sharing of expertise and knowledge can go a long way in enhancing the expertise and capabilities across the sector. Companies in other industries, notably manufacturing, have adopted this practice of benchmarking their operations with best practices with great effectiveness. There is no doubt on the efficacy of the usage of this practice in the healthcare sector. The success of continuing medical education programmes that encourage sharing of experience is an indicator of the myriad possibilities of this sharing process.

At the backend of the system, this data is integrated with the operational systems of providers.

These range from the more mundane financial and human resource systems that run the provider organisations to the more sophisticated knowledge

bases that can provide physicians and practitioners access to information to enhance their capabilities.

While conceptually this framework provides the integration that the sector so badly needs, there are challenges in respect of its implementation. Capturing longitudinal data is a challenge that the sector will need to contend with if it truly has to leverage its knowledge. Few organisations in this sector worldwide have data large enough to undertake temporal analysis of clinical data. The current fragmentation of the sector inhibits the sustained capture of consistent data over a period of time. For the sector to be able to undertake this task, it is essential that it adopt the concept of a 'virtual enterprise'.

This requires the development of standards and protocols that will facilitate the tracking of patients as they move across the system, and sharing of knowledge.

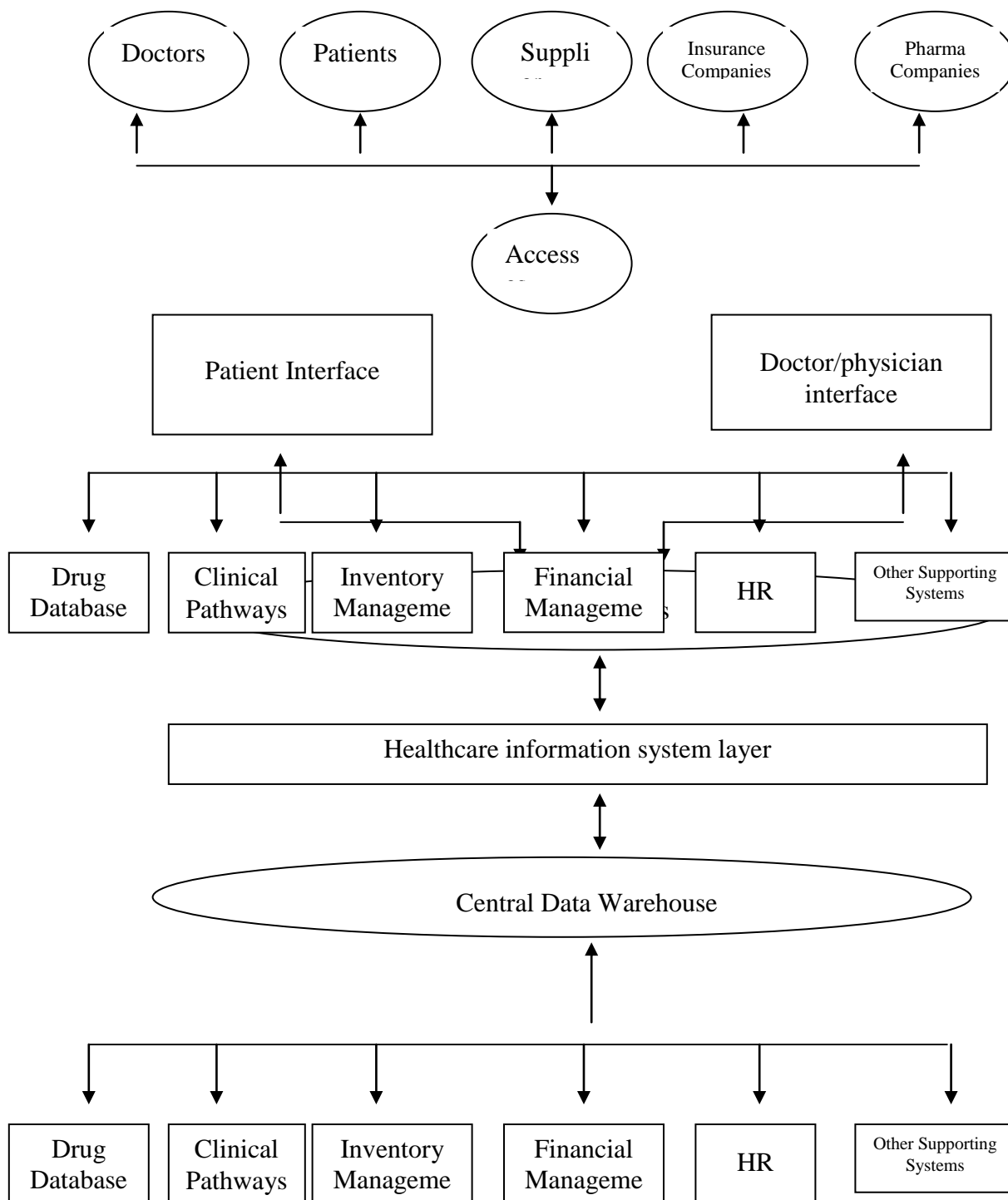
Possibly the most critical challenge faced by the sector is the need for a cultural shift amongst the various members of this sector. The sector needs to develop a mindset that facilitates knowledge sharing. Given the track record of this sector, this is no doubt a difficult path to traverse. However, if the sector has to make the transition from being a mere asset based business model to one that leverages its basic competencies this change is inevitable and imperative.

To conclude, the changing landscape of the healthcare sector is rapidly making the current business model irrelevant.

The current fragmented model worked fine in a simpler and less complex operating environment. With the growing number of players and the exponential increase in their expectations, the sector needs to find new ways of operating if it has continue its relevance in the marketplace.

The new business model needs to be built around the sector's most prized resource, the knowledge generated through its most basic transaction between the patient and the doctor. This knowledge, which historically has been privy only to the physicians, needs to be shared and leveraged across the value chain. This calls for a business model that integrates the diverse set of players and manages the process of knowledge creation and dissemination.

The Healthcare Enterprise
Enterprise-wide Knowledge Management System-a Conceptual Framework



The conceptual framework proposed above facilitates knowledge management through improved access to enterprise wide data and enhances the quality and efficiency of the delivery process. This calls for a significant shift in the mindset of the players towards one of greater sharing for the good of each of them individually and collectively as a sector. There are enough solutions in the market to help the sector with this change.

The question before the sector is not whether they can overcome this hurdle or not, but whether there is an alternative way out.

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