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ABSTRACT

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•Thus far Information Technology has grown mostly from the 'T' or Technology side of IT. The 'I' side of IT is steadily becoming more important. The purpose of information support in any domain is essentially to enable individuals to perform their functions and tasks based on reliable and relevant knowledge. According to a holistic (integral) view supported by the major spiritual movements and religions of the world, the human being consists of the physical layer, emotional layer, intellectual layer, and spiritual layer. The objective existence of the spiritual layer is uncertain as yet, but at least it manifests itself in the forms of spiritual experiences, information and beliefs. We can see that each layer has its functions. To perform the functions effectively with discrimination and in a balanced manner, information and knowledge (external and internal) should be accessible to the individual. Another aspect is that each layer also generates information and knowledge, which can then be communicated and used. Such a model can be projected to apply to communities made up of individuals, as well. It is the spiritual layer which has been least studied in connection with information phenomena, and therefore this area needs special attention. This paper attempts to bring out that the ancient Indian Vedic view of Pancha Kosha, i.e. the five-layers view of conscious human existence, together with 'Knowledge Management' (KM) model to provide some deep insight into how people, process and technology can be integrated holistically with capacity to drive the information space in ways that sustain knowledge enabled wealth creation by organizations.

KEYWORDS

- Knowledge Management,
- Information Technology
- Learning Organizations
- Pancha Kosha

Over the past decades, the world has been experiencing significant changes. The key to change is awareness, sharing ideas and coming up with new and innovative ways of staying ahead of the competition. There is a great need today to acquire, utilise and share knowledge. Today economies have evolved into knowledge economies and is characterised by the fact that knowledge become the major factor of production in the value-adding economic activities. In the knowledge economy, knowledge and information effectively overshadow physical assets as the primary units of production, distribution and consumption. The key to growth in the emerging environment is in innovation which is an outcome of development of knowledge. Organisations are discovering that they need to do a better job of capturing, distributing, sharing, preserving, securing, and valuing their precious knowledge in order to stay ahead of their competition (Liebowitz & Beckman, 1998). The ability of companies to exploit their intangible assets has become far more decisive than their ability to invest and manage their physical assets (Davenport & Prusak, 1998). By managing its knowledge assets, an enterprise can improve its competitiveness and adaptability and increase its chances of success. Managing knowledge is the top strategic agenda in all companies. Companies across all sectors recognise the critical role knowledge management will play in their future success. Today majority of Fortune 500 companies have knowledge management program in one or another form.

As the world hurtles from computers and networks through Information Communication Technologies (or ICT) and convergence towards the emerging Knowledge Society era, *we need appropriate*

paradigms that help us master and sustain knowledge based wealth creation. Knowledge in a domain is used collectively by members of any group that works focused in wealth creating activities. They act in the real world in ways that sustain value propositions for the customers and stakeholders of that group. Knowledge based wealth creation depends upon understanding information and the capacity to use the insight gained from it in a given context to arrive at right judgments. Further, any group using information to create wealth should be equipped to act upon such judgments in ways that create value for the beneficiaries and stakeholders it serves. The tools and systems provided by ICT and convergence should be so deployed and made available such that they facilitate such collective insight-driven actions. In this paper we propose a *Pancha Kosha* paradigm that allows us to integrate the complex information systems and processes, the organization and management of the people or groups that use them such that IT can sustain effective value propositions to all concerned.

Information of value is that which effects a change of state of a user or a group that becomes aware of it. Henry Kissinger, in a speech delivered in Aug. 2003 at New York stated that, "*The role of technology should be to bridge the gulf between the availability of information and the ability to use it.*" Bridging this gulf is the key to building enterprises in the Knowledge Intensive Products and Services area. President of India, Dr. A.P.J. Abdul Kalam constantly lectures upon building a knowledge driven economy as the central theme of his Vision-2020 [1,2,3]. The capacity of any organization to exhibit the characteristics of a Learning Organization [4] depends critically on systems thinking and knowledge management within the organization driven in relation to the wealth-creating activities it is engaged in.

It is increasingly recognized that such capacity is enhanced very substantially by groups working focused in knowledge driven activities and create value by the systematic practice of Knowledge Management (KM). KM the art of involving in every organized activity of an institution or organization the People, Process and Technology to:

- a) *Capture* and accumulate knowledge of people in an organization.
- b) *Disseminate* knowledge where and when it's needed.
- c) Enable people to *re-use* the knowledge work of others.
- d) Provide an environment to *collaborate*.

We call the above aspects as the CDRC (for capture, disseminate, re-use and collaborate) functions of KM. Current KM literature [5] deals with how to (a) set up an IT framework to facilitate this CDRC; (b) how to build KM practices over an Intranet of any given company or organization that facilitates retention of organizational knowledge; and

how to factor it into the management business and its growth [6].

However, we say that the above four CDRC functions are effective only if the group's management of the information dynamics (i.e. the information generation and utilization processes) obeys the following five 'fundamental Rights': *Right Information* to the *Right Person or Group* at the *Right Time, Right Place* and in the *Right Context*. We call these five rights as the 5Rs. The effective application of KM by any group not only respects the CDRC functions, but also drives the capacity to sustain the 5Rs in ways that sustain the value propositions for the customers and stakeholders served by the group. The challenge that we address in this paper is *to extend the KM paradigm from a purely technology driven, or, 'platforms' based intranet approach into a holistic Pancha Kosha paradigm* wherein the people and processes in organizations are aligned with the facilitations provided by ICT and convergence. Such organization is necessary to build and efficiently manage *Knowledge Intensive Products and Services [KIPS]* as often referred to by Dr. Abdul Kalam (visit www.presidentofindia.nic.in).

THE THREE TIERS OF CONVERGENCE

Convergence in Technology is now well established and getting deployed rapidly. It is coming in the form of multimedia integration, IT, communication, and entertainment over the global net. Its very success has paved the way for studies and methods on how to exploit it in the different domains of business, economics, industry, education and diverse services. At a higher level, we are now deploying this ICT or convergence in different forms of Enterprise Applications Integration (EAI see [7] for coverage on different aspects of EAI), web-enabled services in the form of e-commerce, e-governance, e-learning, etc. At this higher level, we may call this as *Convergence in Management*. It is about integrating the people and processes in any organization over the technology framework of convergence.

To effectively bring about this convergence in management, we need to build several component information systems that are aligned with the logic of the business and associated processes. In some sense, this is already happening in systems that support workflow, document management, web-enabled databases, learning management systems, digital library, etc. However, when we have to customise these enterprise applications for target domains (such as health, education, manufacturing, agriculture, finance, etc.), considerable work needs to be done in the development of appropriate classification methods. In fact the logic behind the classification itself delineates the boundary on the kind of knowledge questions that the systems are capable of supporting. This subject or domain specific knowledge map or taxonomy often has to be developed over a *confluence of disciplines*. For example, let us take the case of developing a knowledge portal for agriculture trade. Such a portal needs to have underneath information systems built upon the classification of components related to the particular kind of trade, the

related agriculture domain and finance or business related information. We may call such confluence of disciplines as the *Convergence of Disciplines*. In the emerging knowledge driven economy, we have to master all three tiers of convergence in prototyping and managing the corresponding systems that support enterprise application integration.

PEOPLE, PROCESS, TECHNOLOGY AND CONVERGENCE IN MANAGEMENT

Today the true or market value of any company or organization is not so much judged by the physical and financial assets it commands, but by the ability it has to create wealth and sustain value propositions through their capacity to mobilise human and relations capital. This is illustrated by the S. Kandia's [8] model given in Fig.1.

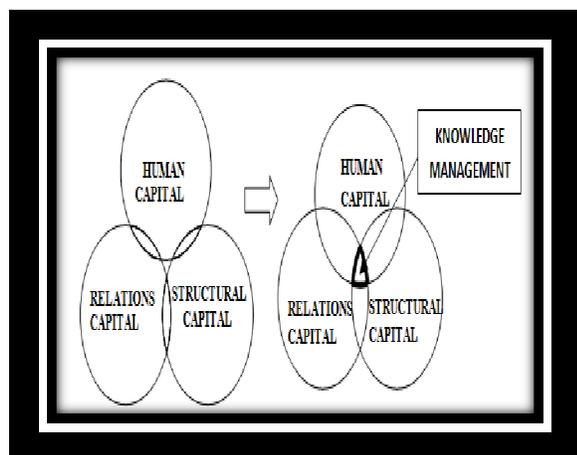


Fig. 1: A KM view of Skandia's Model of Organization's Capital

Traditional view of assets is shown on the left. Most companies treated and managed the three assets they possessed – the financial or structural, the human and the relations – separately by different management groups. The human and relations assets were not really treated as capital assets in a demand driven economy. Development of human capacity was and is often relegated to the human resources development functions. Customer and stakeholder relations, i.e. the relations, were largely driven by marketing and public relations. Since the 1990s, the weight assigned to structural capital has drastically dwindled. *Today companies are assessed not by what they possess, but by what they can deliver competitively with what they are equipped with.* With globalisation and competition, migration of talent has become a serious issue. Retention and building organizational knowledge has become a major priority. Hence an integrated approach to managing all three capitals of an organization – the physical and financial assets, human and relations capital has

become a necessity. This need for holistic management of the three capitals is at the root of most organizations going for EAI. *This integral perspective of capital management is forced by the need to be strongly competitive in a global marketplace where supply of goods and services is in excess and knowledge-worker retention a major concern for every industry.*

It may be useful to point out that the present audit mindset of governments in India, coming from the imperial days of the Raj accounts mainly the structural capital. It was a system designed by the empire to help measure what share the ruler could take in the form of some tax. Capacity for knowledge enabled wealth creation and sharing were outside the purview of such audit. It is a tragedy in India that even in the democratic framework of today with concern for development, our government continues inertially to a large extent this audit mindset and only feebly addresses how we promote and empower people through knowledge and skills to create wealth. This attitude of government is what makes governance ineffective and very expensive. *A positive audit attitude needs to provide indicators through assessment, accounting the capacity that is built and the capacity to retain the human and relations capital of an organization to generate real (not speculative) wealth.* Such audit will help align the management to steer the organization in ways that maximizes wealth creation within the constraints it is forced to work. This is the role of effective knowledge management and *convergence of people, process and technology.* This potential is realized only when the leadership and management of the organization is driven with objectives in consonance with vision and value propositions. Organizational learning needs to be a part of the culture to sustain this convergence as it is becoming essential for its healthy survival in a competitive and global environment.

THE PANCHA KOSHA MODEL OF KNOWLEDGE SOCIETIES

In the context of the three tiers of convergence stated earlier, there is a need for appropriate information organization and knowledge management paradigm. *The paradigm should reflect the ways people are engaged in any focused wealth creating activity.* It should delineate the boundary between the technology facilitation part of knowledge connectivity and the people driven organizational and processes part that uses the technology to create wealth through *knowledge interactions.* In this paper we present a *Pancha Kosha* paradigm to structure knowledge driven organization that *allows for human values to command attention over the value propositions that drive future knowledge enabled businesses and activities.* This addresses to some extent the difficult issue of how to efficiently combine human values driven social context of interaction and collaboration in a globalised economy with business value- propositions driven organizations of knowledge activities.

THE PANCHA KOSHA DESCRIPTION

According to Indian tradition, every conscious and intelligent being is equipped with Pancha Koshas, i.e., five sheaths or layers. This model is stated in the *Taitriya Upanishad* [9] and interpreted in many Indian texts. These are respectively stated as follows.

(i) *Annamaya Kosha*, or the physical body that is sustained by food (or Anna). This is the gross or body of the individual.

(ii) *Pranamaya Kosha*, or the vital energies (i.e. Prana) provided by the harmonious functioning of the different component 'pranas' - breathing, circulation, nervous systems, digestive and inner organs like the liver and the glands that endows the body with life. Without *prana*, the body is dead and not alive.

(iii) *Manomaya Kosha*, or capacities like reflex, emotion, and similar functions of the mind and the system that sustains the instincts for self-preservation, perpetuation and related expressions. With Manomaya, the being responds to stimuli - both of the external world and of the instinctive or emotional world .

(iv) *Vigyanamaya Kosha*, or the discriminative faculty that helps in undertaking action according to what is 'right' and what is 'wrong' in the course of thinking and action. It is said that this acuity is dominant among human beings and weak among animals. It is also said that if humans do not use this faculty with wisdom and compassion, they may be worse than animals!

(v) *Anandamaya Kosha*, or the sheath of bliss. This corresponds to the state of bliss one attains when one is in total harmony with the internal and external environment even as one is engaged in action as necessitated by our state of living in the world. At this level, the person who works, the object of his work and the process of work itself constitute one holistic entity.

A small clarification is needed at this point in applying this concept of *Anandamaya* to people, processes and systems. One may say from a systems perspective that a human being exhibits the characteristics of *Anandamaya* as an emergent state. The main philosophical difference is that in the Indian and eastern traditions, this *Anandamaya*, or the state of bliss is the natural innate state of the conscious being. But this state gets masked by the conditionings one is born with and induced by the conflicting desires and reactions while living in a material world. It is also stated to be elusive unless one follows righteous actions with the right attitudes as dictated by conscience and discriminative faculty.

What is important in the above five-layer view of one's existence is the capacity for a holistic understanding of ourselves in all our aspects of life. In the systems thinking perspective the five have to function together harmoniously. This subject of sustainable attitudes -

individual and collective - for harmony, happiness, need for a compassionate approach, etc. is vast. Indian tradition - from Vedas to Puranas, Upanishads, Bhagavat Gita, and the different schools of philosophy with many a sage or scholar - have been writing and interpreting this field. It is in no way the author's aim to write any commentary on any aspects of these under the context here. But with the increasing interdependence of modern life, we have little choice but to take cognizance of the intensely individual and spiritual ways of conducting our lives that has a base on which *to build a model for practicing in modern times a collective behavioural version of the Pancha Kosha* description stated above. To understand the functions and purpose of one layer we have to take cognizance of its relations with the immediate one or two neighbouring layers. The functions of each layer need to be practiced in the appropriate spirit. This is beautifully stated in the following two lines from the Yogavaasista [10].

*Bhaaro vivekina: shastram bhaaro
jnanam cha raagina:|
Ashaantasya mano bhaaro bhaaro
naatnavibho vapu:|*

In our context, we may broadly translate this as, "For one without discrimination (of what is right action or understanding), the capacity to apply sciences or scriptures is a burden; for one who possesses knowledge but is unwilling to quit old ways and act in the light of one's knowledge, the knowledge itself is a burden; for one who is agitated, the mind is a burden, and for one who does not understand oneself, the body itself is a burden". In essence, the wisdom spelt out above is that mere possession of faculty and capacity, no matter how awesome it may be from a materialistic perspective will not lead us to prosperity and well-being unless we also drive the same with the right values and processes that sustain our collective harmony and prosperity. The challenge is to build systems and institutions that address the complement of the spirit embodied in the above *shloka*.

Today we speak about Learning Organizations. In the emerging Knowledge society paradigm, what our ancient scriptures speak as quoted above in the light of '*Atmavidya*' or self-knowledge at individual level is becoming even more true of organizations (i.e., groups engaged formally in wealth creation activities) themselves. Lou Platt, former CEO of Hewlett Packard once stated that, "HP would be better off if HP knew what HP knew." In some sense this practice of *Atmavidya* increasingly becoming a necessity in organizations or companies is what constitutes a Learning Organization. It is important to note that in the recent investigation of NASA's Shuttle disaster, the investigating committee stated that, "NASA has not demonstrated the characteristics of a Learning Organization". Hence the above *Pancha Kosha* model has much to offer and guide the paradigm for structuring and orienting companies and organizations to build in organizational learning as part of their people and processes management. It is a good sign that in the increasingly globalised knowledge economy, those enterprises,

which are ethical, accountable and socially responsible, are the ones that are steadily growing.

In some sense, the above is reflected in the state of confusion prevalent in our modern society. With all its possession of information, immense amount of knowledge of the material world, ICT, capacity to carry out Herculean technological feats, etc., we appear to be at a dead-end when it comes to *integrating people, processes and technology in ways that build and sustain harmonious, happy and prosperous societies built upon sharing and caring over a democratic and honest business or enterprise framework*. The reason for stating the above paradigm is to help us build a practical reference framework that helps our human values and concerns to arrive at right value propositions which in turn drive the '*New Society of Organizations*' as Peter Drucker [11] describes the emerging knowledge centric era. Such propositions should drive our knowledge activities at different levels – government, business, enterprise, societal or individual – over an integrated global knowledge-managed convergence framework.

In this paper a model has been developed for knowledge societies that are built over the global network upon an analogous framework to the *Pancha Kosha* of human existence described above. In arriving at this framework, we assume that we have little choice as human society but to live with the reality of increasing globalisation and all that related to the needs of societies functioning in healthy interdependent ways. Mahatma Gandhi once stated that, "It is every man's right to be independent but it is every man's duty to be interdependent." *What we try to arrive at is a structure that helps in managing such interdependence over a knowledge framework supported through convergence of people and processes over the vast network and knowledge connectivity underneath*. It is essential that we all be intensely aware at this point that we are building together a paradigm of living that is at the intersection of technology, management, governance, society, sciences and culture that is driving every corner of collective human activities.

The Integration of Pancha Koshas with Five Layers of Knowledge Driven Organizations

ICT and media are fast growing from their infancy and adolescence period to the more mature adulthood era of being driven by knowledge management and knowledge enabled societies over virtual organizations. Ganesh Natarajan, in one of his 'Ganesh' columns in Dataquest articulates on how driving sustainable value propositions in IT are really the need of the hour. He goes to the extent of suggesting that something like a Knowledge Enabled Operational System (calling it KEOS) is necessary in all IT driven organizations to effectively manage the activities of economic importance. We may then ask where exactly in the hierarchy of information collection, processing, interaction, collaboration or knowledge management are the functions of such KEOS can be imbedded. Such imbedding should be

natural in ways that we as individuals function in the kind of organizations and daily life we are likely to confront with. In this context, we present a five-layer view – a material knowledge interaction view analogous to the *Pancha Kosha* stated earlier – for a society that is engaged in knowledge enabled wealth creation over a convergence framework. It is illustrated in Fig. 2. The order of the layers is presented in reverse in conformance with the layers in networks.

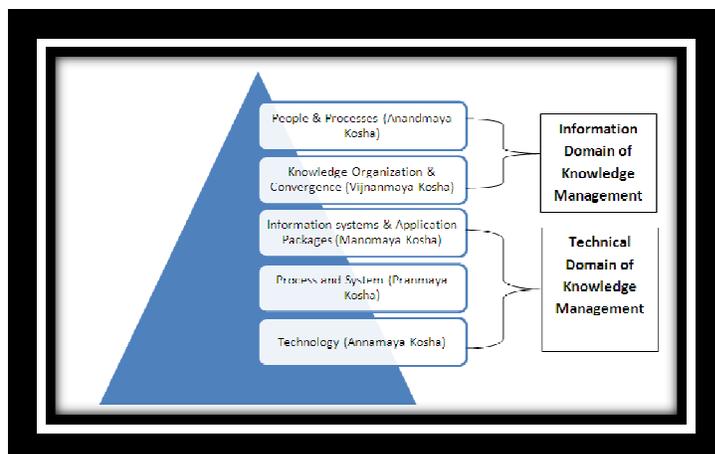


Fig. 2: The Five Layers of Knowledge Managed Organizations

In this figure, the authors delineated the boundary between the 'Technology' side of IT and the 'Information' side of IT from the following consideration. The lower three layers consider themselves with the collection, processing, presentation and interaction within the information space. The lower three layers of technology have been compared to first three Khoshas, viz. Annamaya, Pranmaya and Manomaya. The functional considerations and the different logic associated with each of the diverse systems of these layers are no doubt inspired by the need to address the real world problems. Each of them is much like the assumptions, models and approximations that we make to build a branch of science. These assumptions and models in turn are inspired by the need to address a class of problems. The class of such problems addressed becomes a branch or subject in itself. However the structure and behaviour of the upper two layers are more determined by the real world needs of people using the system to solve real world problems and is compared to Vijnanmaya and Anandmaya Kosha. In our presentation, the 'Information' side is taken to be the way people will use and apply it to solve real world problems and needs. It is the discipline behind such information management that is at the substratum of knowledge based wealth creation paradigms. The 'T' or Technology side of "IT" concerns with building information infrastructure, the mechanical parts of the information processing, communication and presentation of information. With the progress of technology, goods and systems on the 'T' side are available like commodities. *The 'I' side of IT is about enabling and building capacity of people to use ICT and convergence in diverse ways to sustain*

knowledge enabled wealth creation in their respective domains, i.e. to serve the associated Knowledge Intensive Products and Services functions.

Pancha Kosha and three-way communications in organization

The *Pancha Kosha* model has much in common with the conventional management hierarchy. For example in an organization, the lowest corresponds to the physical infrastructure, real estate, transport the equipments and facilities, etc. The second layer is the administration and offices, personnel management, recruitment etc. The third layer is the set of facilities and systems that focus on the business and services provided by the organizations. Fourth (the *vigyanamaya*) is the set of processes and capacity of the management and groups to act with wisdom and discrimination that provide or sustain the value propositions of the business or services offered. *The uppermost, i.e., Anandamaya is achieved and expressed in the share-and-care attitude and the feel-good-factor of triad of the people in the organization, the stakeholders and its customers or beneficiaries.*

Maslow's hierarchy of needs of employees in an organization - consisting of physiological, safety, social- esteem and self-actualisation - also corresponds to the *Pancha Kosha* description in the organizational behaviour context [12]. However, the real test and taste of a successful organization is the perceptible feeling of *Anandamaya*, something like the collective 'feel good factor' that pervades it. It may be viewed as an emergent property of correct implementation and practice of KM in the right spirit at all levels. We may also take the stand that the goal of any organization is to attain this *Anandamaya* in consonance with the purpose for which the organization has been set up. Such *Anandamaya* is elusive unless the organization, the attitude of serving its customers and the feel-good-factor of its stakeholders are all integrated in every substantive decision and action.

Anurag Srivastava of Wipro Infotech says that the spirit of KM in an organization is something amorphous and pervades like the protoplasm in a living cell. It pervades everywhere within the cell, is the medium that nourishes the health and in which the cell's genes grow and multiply. Analogously, the spirit of KM should pervade an organization at various levels and ensure that the behaviour of a living healthy organism is exhibited and felt by all who constitute it. *Not to take cognizance of this pervasive aspect of knowledge management is akin to developing real estate indiscriminately without the environment or ecological impact that will forebode a future disaster in globalised world.* This requires that effective communications exist both vertically and horizontally in every group driven activity. First is the communications within members of the group that is sensitive and respects the right information at the right time and the right context. The second is the communication across related groups for effectiveness. The third is the communications between the group and its stakeholders in the context of the vision, mission and objectives

of the organization. Effective EAI implementation in every enterprise should facilitate this three-way communications. To ensure such communications, we need to understand the information - knowledge interactions in any knowledge enabled wealth creation activity.

CONCLUSION

In this paper we have brought out that the concepts of Knowledge Management are best extended and practiced along the line of a Pancha Kosha model as applied to focused groups whom we call as Knowledge Citizen. Such Citizen groups consisting of Knowledge Workers are the ones that sustain the knowledge based wealth creation processes. Such group space should be equipped with the IT and ICT facilitated appropriate indicators and actuators over a knowledge organization and convergence framework. The members of the K-Citizen access and manage their concerned K-Plant by a Knowledge Interaction Interface over the technical systems.

The model and concept proposed in this paper are helpful in taking the field of Knowledge Management towards understanding and managing knowledge enabled wealth creation paradigms in any human endeavor. It is about time that we study the organization, study and management of the 'I' in 'IT' along the above lines and make IT useful and productive for the welfare in the context of the increasingly globalised economy. The approach shown here has the potential to address the capacity building and as effective management base for the emerging knowledge driven economy. The concepts and the framework presented here will be of some help in building a Knowledge Society Vision for the country as a whole.

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