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WELLSPRINGS OF KNOWLEDGE: HARNESSING TECHNOLOGY FOR BUILDING AND SUSTAINING ORGANIZATIONAL LEARNING

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ABSTRACT

The ability to create a stream of revolutionary changes in an organization through the use of information technology requires a sustainable competitive commitment and openness to learning. This breakthrough innovation involves unexpected leaps of creativity and insight. Managers of organizations who can tap into this vast pool of creative energy can elevate the innovative capabilities of their teams well beyond imagination. To harness creative power of tacit knowledge through information technology is to foster the emotional commitment and deep personal involvement of team members.

The scope of technology, an organization can adopt is vast, ranging from something seemingly simple, to investing in the latest state-of-the-art computer-aided manufacturing machinery. Regardless of the complexity of the system or the size of organization, one thing is absolutely certain, that the incorporation of such technology, performance scale will be excellent. The impact of information technology on the organization is emphasized by Nadler, who states "perhaps the largest single influence on organizational architecture and design has been the evolution of information technology."(Gerstein, p.5)

This paper draws together knowledge from a variety of fields to propose that harnessing technology and innovation management can be viewed as a form of organizational capability. Organizational learning is supported as a construct that combines within a dynamic and spiral process of knowledge conversion from the individual and team in order to increase the competitive advantage, and effectiveness of an organization. Learning occurs due to the influence of various factors such as structure, strategy, environment, technology, culture, management decisions, opportunities for growth and development.

The paper highlights the mediating factors of information technology, management challenges, learning objectives and developmental process of OL. It further explores and identifies those elements of information technology which includes harnessing the competence base, organizational intelligence, creativity and idea management, organizational structures and

systems, updating work culture, training personnel, screening employees and thereby improving organizational performance. An extensive review of literature on the impact of information technology on OL along with case studies of Deloitte and Wall- Mart develops insight into knowledge acquisition from data to information through a process of comparisons, consequences, connections and conversations.

Many organizations including Deloitte have realized the power of sharing ideas and knowledge and have started initiatives for the same. Deloitte, for instance, has tied up with Yammer, a social networking site, to create an internal social network where employees can be their creative self and propagate ideas worth spreading. It serves as a platform for employees across the globe to interact, take help of each other, make friends and share ideas.

The use of information technology has been an essential part of Wal-Mart's growth. A decade ago Wal-Mart trailed K-Mart, which could negotiate lower wholesale prices due to its size. Part of Wal-Mart's strategy for catching up was a point-of-sale system, a computerized system that identifies each item sold, finds its price in a computerized database, creates an accurate sales receipt for the customer, and stores this item-by-item sales information for use in analyzing sales and reordering inventory.

Key Words: mediating factors, information technology **,** organizational intelligence **,** harnessing competence **,**idea management

1. Introduction:

The ability to create a stream of revolutionary changes in an organization through the use of information technology requires a sustainable competitive commitment and openness to learning. These breakthrough innovations involve unexpected leaps of creativity and insight. Managers of organizations who can tap into this vast pool of creative energy can elevate the innovative capabilities of their teams well beyond imagination. To harness creative power of tacit knowledge through information technology is to foster the emotional commitment and deep personal involvement of team members.

The scope of technology, an organization can adopt is vast, ranging from something seemingly simple, to investing in the latest state-of-the-art computer-aided manufacturing machinery. Regardless of the complexity of the system or the size of organization, one thing is absolutely certain, that the incorporation of such technology, performance scale will be excellent. Technological innovation is essential for human development from the printing press to the computer; people have devised tools for facilitating learning and communication. Technology is not inherently good or bad, the outcome depends on how it is used. Information and communications technology (ICT) involves innovations in micro electronics, computing (hardware and soft ware), telecommunications and optic-electronics, micro processors, semiconductors, fiber optics. These innovations enable the processing and storage of enormous amounts of information, along with rapid distribution of information through communication networks

It is accepted that telecommunication is a basic infrastructure necessary for economic and social development of a country. This is even becoming stronger than ever as information related Economic activities are growing. Information and communications technology may be described as the support of the central nervous system of complex societies, transmitting and processing information and commands among the various parts of such societies. Internet plays a fundamental function in ICT role .The impact of information technology on the organization is **emphasized by Nadler,** who states **"perhaps the largest single influence on organizational**

architecture and design has been the evolution of information technology."(Gerstein, p.5)

This paper draws together knowledge from a variety of fields to propose that harnessing technology and innovation management can be viewed as a form of organizational capability. Organizational learning is supported as a construct that combines within a dynamic and spiral process of knowledge conversion from the individual and team in order to increase the competitive advantage, and effectiveness of an organization. Learning occurs due to the influence of various factors such as structure, strategy, environment, technology, culture, management decisions, opportunities for growth and development.

The paper deals with the mediating factors of information technology, management challenges, learning objectives and developmental process of OL. **It further explores and identifies those elements of information technology which includes harnessing the competence base, organizational intelligence, creativity and idea management, organizational structures and systems, updating work culture, training personnel, screening employees and** thereby improving organizational performance. **An extensive review of literature on the impact of information technology on OL along with case studies of Deloitte and Wall- Mart develops insight into knowledge acquisition from data to information through a process of comparisons, consequences, connections and conversations.**

2. Learning Objectives:

Contrast theories of organizations, describe decision process and evaluate role of information systems to support business strategy **Management Challenges:** Organizations & information systems, Changing roles of systems in organizations, Managers, decision making & information systems, Information systems & business strategy, Sustainability of competitive advantage, Fitting technology & organization.

3. Mediating factors- Environment of the organization, culture, structure, standard procedures and management decisions. Structure includes **hierarchy, division of labour, rules and procedures.**

4. How Information Systems Affect Organizations:

Agency theory: Firm is nexus of contracts among self-interested parties requiring supervision

Behavioral theories: Information systems could change hierarchy of decision making; reduce need for middle management & clerical support; distribute information.

Microeconomic model: Information technology is a factor of production, like capital & labor

Transaction cost theory: Organizations attempt to minimize transaction costs internally & externally

5. Knowledge Acquisition:

According to Dodgson (1993), organizational learning occurs when we create an organizational knowledge base, firm-specific competencies, and routines. Knowledge-bases are created by acquiring, storing, interpreting, and manipulating information both from within and outside the organization. Strategic applications of information systems for knowledge acquisition can take two forms (Mason, 1993):

'An organizations success will finally depends on the speed at which it can generate , capture, disseminate knowledge and then use this knowledge to develop capabilities that cannot easily be copied by rivals .(Sharkie 2003:31)

Only tacit knowledge, whether alone or in conjunctions with explicit knowledge, can give an organization a sustainable competitive advantage. Such knowledge is always associated with people, whereas explicit knowledge is generally capable of being stored, processed, and communicated using widely available technologies.(Burton-Jones (2001:31)

A good example of tacit knowledge is the Stradivarious violin, which commands a high price because of it superior sound. Even with all the technology at our disposal it is still difficult to achieve a similar sound. Explict knowledge is formal and systematic. For this reason it can be easily communicated and shared in product specification, scientific formula or a computer programme…. Tacit knowledge is highly personal;, it is hard to formalize and therefore difficult and if not impossible to communicate.(Nonaka 1998:27)

6. Knowledge Management and Information Technology:

The term 'knowledge management' was first used by Wiig (1990) in a keynote address for the United Nations' International Labour Organization. Although, it is now widely used, there are a number of interpretations regarding the meaning of knowledge management. *Knowledge* widely differs from information in that it exists within people and is personal to them. Merchand (1998:255) stated that 'information involves the actions of sensing, collecting, organizing, processing, communicating and using expressions and representations of ours or others' knowledge, whereas knowledge emphasizes personal interpreting and understand Given the human aspect of knowledge management, the dynamic and potential tension between individual and organizational learning is an important consideration. What ideally is required is an approach that links the individual and the organization with learning processes, systems and technology which will benefit both in a reciprocal partnership.

Knowledge management is the explicit and systematic management of vital knowledge and its associated process of creation, gathering, organizing, diffusion, use and exploitation. It requires turning personal knowledge into corporate knowledge which can be widely shared throughout an organization and appropriately applied. (Skryme, 1977) .

The need for knowledge management has spurred the development of software system and consulting services. Knowledge data bases are becoming more common, and the big consulting firms have introduced numerous related services: Accenture- Knowledge Exchange; Booz Allen and Hamilton- Knowledge on line; Ernst and Young- centre for business knowledge; KPMG Peat Marwick- knowledge manager; and Price Waterhouse- knowledge View (Brinker, 2000:5)

The focus of knowledge management is to harness and control the organization's expertise to preserve it and to put it to use in the best possible ways (Wiig 1990)

7. Knowledge guides us in the process of analyzing data and utilizing information.

Knowledge derives from information as information derives from data. This transformation happens through the following processes:

Comparison: how does information about one situation compared to other situations we have known?

Consequences: what implications does the information have for decisions and actions?

Connections: how does this bit of knowledge relate to others?

Conversation: what do other people think about this information?

Learning Management increases Workforce Performance:
For a company to succeed in today's rapidly changing and competitive marketplace, it must increase workforce productivity and optimize organization-wide talent. With rapidly changing skill sets and job requirements, this becomes an even more difficult challenge for organizations.

The best-in class Learning Management System enables HR organizations to create, deliver, measure and evaluate corporate learning programs to create a high-performing workforce. It enables one to:

- Drive employee performance to new levels: Dramatically impacting your business' bottom line.
- Tie learning to various HR activities: Engage employees with development opportunities, such as performance tracking, career development and succession planning.
- Tightly link learning initiatives with key business operations: Increase revenue, customer satisfaction and overall results.

8. Competence-based Strategic Management: is a relatively new way of thinking about how organizations gain high performance for a significant period of time. Established as a theory in the early 1990s, competence-based strategic management theory explains how organizations can develop sustainable competitive advantage in a systematic and structural way. The theory of competence-based strategic management is an integrative strategy theory that incorporates . Economic, organizational and behavioural concerns in a framework that is dynamic, systemic, cognitive and holistic (Sanchez and Heene, 2004). This theory defines competence as: the ability to sustain the coordinated deployment of resources in ways that helps an organization achieve its goals .

Competence mode I: cognitive flexibility to imagine alternative strategic logics. Competence mode I derives from the cognitive flexibility of an organization to conceive of alternative ways of creating value in markets. The source of this mode of competence is, in essence, the collective corporate imagination of an organization's managers in perceiving feasible market opportunities for the organization to create value.

Competence mode II: cognitive flexibility to imagine alternative management processes. Competence mode II results from a second form of cognitive flexibility of managers to conceive of alternative management processes for implementing strategic logics identified by competence mode I. The managerial abilities underlying competence mode II include the ability to identify the kinds of resources (assets, knowledge and capabilities) required to carry out a given strategic logic, to create effective organization designs

Competence mode III: coordination flexibility to identify, configure and deploy resources. Competence mode III drives from the coordination flexibility of an organization to assemble chains of tangible and intangible resources needed to carry out the organization's strategic logics for creating value through its product offers.

Competence mode IV: resource flexibility to be used in alternative operations. While competence mode III derives from the ability of an organization to assemble resource chains in support of product offers, competence mode IV derives from the ability of the resources in an organization's resource chains to be used in alternative ways.

Competence mode V: operating flexibility in applying skills and capabilities to available resources. Competence mode V derives from the ability of an organization to use the flexibilities of its firm specific and firm-addressable resources effectively and efficiently over a range of operating conditions.

9. The process of managing performance:

The process of managing performance is based on two simple propositions. First, people are most likely to perform when they know and understand what is expected of them. Second the ability to meet these expectations depends on the levels of knowledge, skill, competency and motivation of individuals. **Performance management involves planning, action, monitoring**

and reviews.

Planning- reaching agreement on objectives and standards to be achieved and the level of competence to be attained.

Action- taking action to implement plans to achieve the required standards of day-to-day work.

Monitoring – Actions and outcomes are monitored continuously by individuals as well as by the manager.

Reviews –these can take place at any appropriate time during the year. The reviews can be quite informal and different methods can be used to get feedback from the individuals

10. Case Study: Deloitte:

Harnessing the competence base, Organizational intelligence

Many organizations including **Deloitte** have realized the power of sharing ideas and knowledge and have started initiatives for the same. Deloitte, for instance, has tied up with **Yammer**, a social networking site, to create an internal social network where employees can be their creative self and propagate ideas worth spreading. It serves as a platform for employees across the globe to interact, take help of each other, make friends and share ideas.

Creativity and Idea Management:

Many organizations including Deloitte realize the importance of global knowledge base. Deloitte has in place a global knowledge repository which is accessible to all its employees. This serves as an accelerator which will help reduce time and effort required to complete.

different tasksoperating in a different geographical location and they have added this to the knowledge . For instance, if a particular type of work has already been performed by some team in Deloitte repository, it becomes easier for another team at a different locale to leverage that work probably to serve a different client

Technology used in screening employees:

With the advancement in technology which led to creation of social networking arenas like Face book, LinkedIn and Google, Cooperators have resorted to these sites for the initial screening of a prospective employee. The screening members generally look at personality traits, their online social presence. Such websites are also used by agencies that run background check on employees.

11. Updating the work Culture:

Advancement in technology has made work-life fit easier to achieve. Many organizations now support "Work from Home". Advancement in technologies such as "Virtual Private Network (VPN)" has played an important role in this. Many people, especially women make use of this provision. It not only increases the satisfaction quotient but the least, enhances performance.

12. Communication:

Seamless communication across boundaries and geographies is one of the biggest contributions that IT has made. Organizations like Deloitte harness this capability to the fullest. They setup offices in counties which offer cheaper labor (India for instance) and train and equip them to serve global clients.

13. Deloitte's networking capability through ICT:

Deloitte's new report identifies a growth cluster at the heart of the collision of megatrends such as rising life expectancies, rising relative health care costs and tightening public sector health budgets. This group contains the biggest sectarian opportunities – both nationally and for South Australia. There are also opportunities emerging in Central Australia, with potential to use next generation technologies to open new potential around **solar** energy generation and storage. "*With such a variety of sectors at the intersection of these new and emerging trends, future growth opportunities certainly exist for a large number of South Australia's small and medium enterprises – businesses that are the lifeblood of our state's economy*," (Jody Burton.2014)

(source: @DeloitteNewsAU**)**

14. Case Study: Wal-Mart's Growth

The use of information technology has been an essential part of **Wal-Mart's growth**. A decade ago Wal-Mart trailed K-Mart, which could negotiate lower wholesale prices due to its size. Part of Wal-Mart's strategy for catching up was a point-of-sale system, a computerized system that identifies each item sold, finds its price in a computerized database, creates an accurate sales receipt for the customer, and stores this item-by-item sales information for use in analyzing sales and reordering inventory.

15. Wal-Mart: Attaining competitive advantage from information technology

Wal-Mart is the world's largest and most profitable retailer, with $44 billion in 1992 sales and 380,000 employees. Its growth from a single store in Rogers, Arkansas to almost 2,000 bright, attractive stores in 43 states is legendary in American business. Sam Walton was central to the legend. He built his empire on a belief in providing value for the customer and empowering employees, who are called associates. The Wal-Mart culture is built on obtaining the most current information about what customers want, getting the best ideas from employees about how to run the stores well, and sharing some of the profits with employees. The way Wal-Mart

operates has been a model for General Electric's quest to increase speed and productivity. Aside from handling information efficiently, effective use of this information helps Wal-Mart avoid overstocking by learning what merchandise is selling slowly. Wal-Mart's inventory and distribution system is a world leader. Over one 5 year period, Wal-Mart invested over $600 million in information systems.

Wal-Mart use telecommunications to link directly from its stores to its central computer system and from that system to its supplier's computers. This allows automatic reordering and better coordination. Knowing exactly what is selling well and coordinating closely with suppliers permits Wal-Mart to tie up less money in inventory than many of their competitors. At its computerized warehouses, many goods arrive and leave without ever sitting on a shelf

With better coordination, the suppliers can have more consistent manufacturing runs, lower their costs, and pass some of the savings on to Wal-Mart and eventually the consumer. Some 3,800 vendors now get daily sales data directly from Wal-Mart stores. And 1,500 have the same decision and analysis software that Wal-Mart's own buyers use to check how a product performs in various markets.

Aside from computers and telecommunications equipment, the technical basis of the point-of-sale system is the bar code scanner. Bar code scanners make it possible to record the sale of each item and make that information available immediately for both reordering and sales analysis. The first use of bar code scanners occurred in the 1970s. After two decades of experience, accurate inventory tracking using bar code scanners is a competitive necessity for large grocery stores and retailers.

Consistent with the adoption of any information technology, development and acceptance of bar codes required agreements on standards. The idea of bar code scanning required that industry develop a universal product code (UPC) system, a standard method for identifying products with numbers and coding those numbers as the type of bar code shown in the photo. The UPC codes that we see routinely today were chosen from a number of alternatives developed by different companies.

Stepping away from the technology and back to Wal-Mart, even its tremendous success has brought some problems. The huge Wal-Mart stores on the outskirts of small towns have overwhelmed many merchants on Main Street. Grantham (1993) states that technology can be used to clarify assumptions, speed up communications, elicit tacit knowledge, and construct histories of insights and catalog them. Greater emphasis is placed on the influence of technology to facilitate organizational learning.

Conclusions:

The dynamic globalised knowledge economy has created many challenges to firms and different organizations to sustain competitive advantage through harnessing ICT in an elaborate manner. Organizational learning strategies will have to be developed through informational technology.

Most of the organizations have learned through innovative practices how optimal use of .technology can take them to a higher level of performance and profit. Just as people, for various reasons, may not use their intelligence to succeed, organizations may not employ their intelligence if they do not have good leaders, clever strategies and a favorable environment.

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