INFORMATION AGE TRANSFORMATION

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Abstract

The Information Age is transforming our world at an ever-increasing rate. The cultural dynamics of increasing consumer demand and the security requirements within demand and guide this evolution. All elements of aggregate demand, including consumers, business and the government, are involved in this transformation. Society and its organizations are constrained in this evolutionary demand by the environment’s ability to transform economically. An essential ingredient in the transformation process is also the human ability to transform. Organizations are overwhelmed by a “new wealth” of information. The organization in today’s Information Age cannot operate efficiently and effectively without access to the World Wide Web, the ability to send and receive, both internal and external email. The organization must also be cognizant of the security demands in this new environment. This research paper will focus on the characteristics of the Information Age and its strategy for meeting the evolutionary requirements demanded by consumers and society, addressing the required managerial challenges associated with Information Age Transformation and the Transformation Roadmap.
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INTRODUCTION

The Information Age is “at our doorstep” and it is “knocking loudly”! The world community, the economy, organizations and all mankind must “answer the door”! There is “no turning back”!

The transformation of interactions between government and business sectors and their evolution from communistic to capitalistic markets, has presented the world community with an economic precedent greater than that of the Industrial Revolution.

This transformation has revolutionized economies and organizations from the Industrial Age to the Information Age. In the Industrial Age, economies of scale and scope drove competition and it was these perfectly competitive markets that permitted only the “strongest to survive”. Organizations goals were “driven’ by mass production and standardization of products and services. Machines and assembly lines, using unskilled labor and semiskilled labor, realized these mass production efforts. These efforts involved tight worker “routines” and large factory floors. The role of technology in the Industrial Age was overshadowed by factory production routines and demands.

Within the 20th century, there was an emergence of the “Information Era”. “The Information Era will do for human capital what the Industrial Revolution did for physical capital”. (Courchene, 2002) The Information Age “presented” economies and organizations with the requirements that in order to remain competitive they must develop new technologies, but more importantly, they must develop new capabilities within the organization.

Organizations, in this “new age”, must invest in their intangible assets and maximize their tangible assets more efficiently and effectively.
Miller (1996) states, “People are essentially now competing for very, very limited market share. These information systems are under development. So what you see today and what you have tomorrow may be totally different”.

The definition of the transformation process between the Industrial Age and the Information Age is latent with misunderstandings. Modernization is often “credited” with transformation. Current transformational efforts are focused inwardly as organizations modernize in isolation. (Alberts 2002) Organizations, which operate in isolation, are denied the benefits of synergy.

The strategy for effective Information Age Transformation begins with internal analysis and the identification of specific issues that will be addressed in this transformation process. Furthermore, effective organizations must forecast to address specific perceived remedies to situational concerns. Network-centric concepts, which provide the platform for communications and the access of information, are designed to assist the organization in capitalizing on present opportunities, while further “positioning” them for future opportunities.

The transformation from the Industrial Age to the Information Age is a “never ending” process, both a process of denial and renewal. Former industrial “foundations” will have to be reexamined and brought in line with current capabilities to meet and exceed current and future economic demands.

The Information Age has “ushered in” a new era of organizational capabilities and developments. Organizations in the Information Age can now experiment with forecasted variables, permitting executives to constructively and cost effectively study “what if” scenarios. This new agility allows executives to continually access and modify operations
on a “minute by minute” basis; rather than, preplanning and adaptation only after operations are complete. The Information Age also allows executives the opportunity to share information on a “peer to peer” level; thereby, sharing experiences and learning situational awareness.

**CHARACTERISTICS OF THE INFORMATION AGE**

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The evolution from the Industrial Age to the Information Age has changed the relative values associated with the Factors of Production: Land, Labor, Capital, Entrepreneurism and Technology.

The production factor of Land has evolved in the era of the Information Age. From the Industrial Age, the economy was developed with heavy industrial base in the North. The agricultural base in the South followed the industrial base in the North. The
changes that are being realized by the advent of the Information Age require a different focus on land contribution. Many of the requirements for large and cumbersome factory "floors" are now being streamlined; thereby reducing land requirements.

The requirements for labor have also changed in this “new age”. Once highly sought physical labor is now being replace by an emphasis on intellectual labor. Investments in human capital, in particular, education and information technology training are required in the new millennium.

Alberts (2002) outlines;

The Industrial Age historically has developed the areas of;

- Long Cycle Time
- Well Developed Tools/Processes
- Deliberate Planning

The information age has brought with it a new focus on the elements of

- Short Cycle Time
- New Competencies
- Adaptive Planning
- Integrated Joint and Interdependent

Globalization endeavors;

- Developed Rules in Emerging Rules
- Mature Markets versus Market Opportunities
- Narrowing Customer Base versus New Customer Base Emerging
- Security
The Information Age has rapidly increased the use of Information Technology (IT). Executives realize that the effective use of Information technology is not only important for present day operations and competitive advantages, but is crucial for the organizations long term survival. This (IT) implementation is not without internal and external risks. Executives must master newer, faster, ever evolving information systems.

System obsolescence, increase costs for hardware/software and external capability limitations may prohibit full adaptation. Organizations may be forced to operate on systems that are decades old, requiring additional time and operating costs. The appropriate risk-managing strategies depend on the nature of the risk and other situational variables that influence the organization's ability to accurately respond. (McGaughey and Snyder, 1994)

INFORMATION DOMINATION

Alberts, Garstka, Hayes and Signori (2002) state that information can be divided into three categories;

- Richness or quality of information
- Reach or distribution of the information domain
- Quality of interaction within the information domain

The richness or quality of information, necessary in the Information Age, can be measured in terms of information completeness and utilization. Information must be current and complete. Information that is not in this required format will cost organizations additional time and costs incurred in realizing original information requests.
Information must also be correct. Information that is not correct increases the risk of organizational operations. Once executives experience incorrect information sources, they will be very reluctant to use them again. The opposite of this is also true. When executives experience information sources that are correct, whether internal or external they will return to these information sources repeatedly.

Executives will be motivated by information that is adaptable to the specific mission. The Information Age requires a “new standard” of organizational operations and executives must be prepared to meet these challenges with current, correct and timely information. These information requirements will allow executives to conduct organizational operations with the full faith in the organization and its leadership. This will produce synergistic effects, because the completeness and correctness of the information flow in the era of the Information age will motivate managers to contribute to larger and larger organizational concerns.

**STRATEGY FOR TRANSFORMATION**

In the development of the Information Age strategy, executives should be aware that although the information flows in today's industrial economy have significantly increased, they may not be enough to capture the increasing informational demand of the future. This information requirement affects that way decisions are made, forecasts are arrived and the way information is disseminated throughout the organization. This dissemination of information occurs vertically among various levels of organizational command, horizontally between executives in the sharing of information and in the form of guidance and direction to subordinates.
The Information Age has “ushered in” the concept of Knowledge Management. Knowledge Management is the application of the organization's knowledge based assets. The historical view of this concept has that it has often been regarded by executives as a managerial “by product” with limited applications. The (KMS) Knowledge Management System has evolved in the Information Age to include providing direct response to customer's needs and business colleagues with accessible information to increase required workflows.

The features of process knowledge can be studied in the sense that knowledge associated with process is dubbed “process knowledge” and socio-cultural features of knowledge management should be illustrated in terms of knowledge transformation path in the information space. (Seungkwon, Kilpyo, Gee Woo & Ilhwan, 2002)

**ELEMENTS OF TRANSFORMATION**

Organizations will define different visions on their expectations when they discuss their organizational roadmap. Most would agree that a roadmap details the path from where they are now to where they envision themselves in the future. In the case of information evolution, organizations and industries must be aware that the development of the network capabilities packages and upgrades will not produce an end state, only a “continuous beginning”.

This ongoing change from one age to another cannot begin to seem implemented if the organization and its executives are incapable of conducting operations in a more efficient and more defined manner. This definition will include a new focus on continuous adaptation of Information Systems.
The new “Age of Information” fosters and contributes to organizational awareness and innovation. The organizational awareness contributes to employee involvement, which fosters an environment of increased productivity. Organizational awareness allows employees to demonstrate an understanding of organizational climate and culture, both formal and informal. This understanding contributes organizational unity and organizational endeavors. Awareness of formal and informal structures assist employees in understanding command structures in their organizations. This understanding allows them to better utilize communication channels within the organization.

Organizational awareness assists executives in better understanding their organization roles and the roles of other organizations. They are better equipped to understand the total impact of the managerial decisions. Finally, organizational awareness allows senior executives to search for answers to long-term problems within the organization. It defines the Transformational Roadmap foundations.

Organizations foster and increase their operational capabilities by the implementation of an organizational Transformation Roadmap. The Transformation Roadmap will reflect objectives, and both short and long term strategies to not only meet, but also exceed organizational operating agendas. The roadmap defines the accomplishments and future plans that will directly contribute to organizational goals, with in-depth analysis on;

- Infrastructure
- Human Capital
- Business Processes
In the evolution of eras, organizations must not lose sight of their corporate visions. They must be vigilant in protecting themselves from over extending themselves or by taking dramatic evolutionary steps too soon. The process of change takes time and organizations must understand that although these new Information Age capabilities will increase every level of productivity, they can be detrimental if not carefully implemented. This implementation should be in a series of realistic steps, keeping all members fully informed and insuring that all are in agreement of capability systems.

The directions of the organization provided by the Transformation Roadmap will contribute to developing direction; in which, organizations can proceed. The roadmap must be network-centric to support experimentation and testing. Experimentation is crucial to the evolution of systems. The experimentation levels in the Information Age will allow for rapid adaptation of new systems packages and should foster an environment of hypothesis testing, experimentation, demonstration, presentation and implementation.

The Transformation Roadmap will require the exchanging of information in all directions. The Information Age requires sharing of information in all departments. The Transformation Roadmap should include plan to this collaboration and focus efforts to communicate interdepartmentally.

The Roadmap will require a clear definition in the identification of all phase in the network-centric approach.
DEALING WITH THE CHALLENGES OF CHANGE

The positive, contributory Transformation “attitude”, by employees and organizations is critical toward transitional success. This exuberance; however, must be “tempered” as organizational executives and levels of labor experience stress with the realization that if they do not change and adapt fast enough, they may be “left behind”. These attitudes will prove to be counterproductive. “Both individual and organizational attitudes toward change are vital to success in times of transition; however, individuals and organizations alike are feeling the stress and impact of not moving fast enough, while simultaneously watching with trepidation the suffering of others who have moved too quickly”. (Milliron, 1999)

Organizational executives are in agreement concerning the challenges they face and invariably their responses will be the same: technology, growing revenue and improving operational profitability. All industries, within the economy are being transformed in the Information Age. Kho bragade (2001) affirms, “All firms are increasingly dealing in the exchange of information rather than cash. The three most urgent technology projects, which firms have completed recently or plan to do soon, are building Internet front-end capabilities, installing or updating back-office software and updating legacy computer systems to meet customer demands. Outsourcing and alliances give banks the freedom to focus on their core competencies”.
Dealing with change and the organization ability to adapt is one of the most fundamental challenges facing organizational professionals. Flexible and adaptable Information Systems (IS) can provide a powerful tool for organizations and business, but rigid, inflexible systems can create serious obstacles to organizational effectiveness and success. Change-related issues for IS arise from

- Systems
- Group collaboration and organization
- Interactions

Group collaboration is concerned with individuals working on a common process, or on an improvised project. “The organizational facet is concerned with managing work from a formal organizational prospective the three-faceted framework is useful for classifying the origins and impacts of change. Change can originate in any of the three facets”. (De Michelis, Jarke and Matthes, 1998)

Information transformation contains security challenges. These new security challenges/ threats are evolving as the Information Age evolves. Organization’s responses to these security threats have to change. This demands industries to restructure their organizations, to restructure the way they think about virtually everything in the way they run their organizations.

McLeod, Jr and Schell (2001) state, “Systems security refers to the protection of all the firm’s information resources from threats by unauthorized parties. The firm implements a program of effective systems security by first identifying vulnerabilities and then implementing the required countermeasures and safeguards”. McLeod, Jr and Schell (2001) identify three main security systems objectives:
• Confidentiality- the organization seeks to protect its internal data sources, database and information, (human resources, financial, accounting, etc.), from unauthorized sources.

• Availability- the organization seeks to provide IS data to those intended to use it. It must be accessible, clear and coherent.

• Integrity- the subsystems of IS should provide an accurate definition of the services they provide.

New Information Security measures must be sought and implemented to identify and resolve security issues between internal and external information operations. If organizations are not careful, they could introduce new security measures, designed to protect them against these new threats, but actually take away from productivity, undermining their competitive advantages.

**ADVERSE CONSEQUENCES**

The efficiency that is the “hallmark” of the Information Age can be attributed to technology. Organizations that rely primarily on technology become more vulnerable, less willing to accept and responsibly confront internal and external risk issues.

Organization’s increased reliance on information systems makes them vulnerable to system disruptions. IS provide organizations with a wealth of information for collecting, interpreting, analysis organization procedures; however, failures in these IS systems can cause major operational deficiencies.
The Information Age has also “captured” individual’s attention to the media. These external information sources are available to executives constantly. The media poses certain risks to organizational performance and development.

There can be arguments for and against the evolution to the Age of Information. Many argue that organizations and societies should avoid the change in its entirety. They discuss issues such as increased pollution, congestion, health problems, domestic violence brought on by stress, workplace violence, etc. Others agree that the Information Age and the technological advances it brings are needed; however, they should be introduced in a slow, systematical manner.

The increasing complexity of information management requires that timely, relevant information be dispersed throughout the organization. This dissemination management is the responsibility of midlevel managers; as well as, the Information Specialists. (McLeod, Jr. and Schell, 2001) This can cause adverse effects if executives are not continuously trained in the presentation and collection mechanisms in this new responsibility.

Executives that are preoccupied with avoiding adverse consequences of the Information Age implementation decisions can also experience organization adversity. Executives should be able to operate in an environment of integrity and reliability. If they are working in conditions of uncertainty, adverse contributions can occur. Executives may hesitate to develop new ideas and implement new concepts in this rapidly changing environment. The emphasis in the Information Age should be on enabling, not on limitations.
Information technologies, most notably those related to information sharing, collaboration and visualization enable organizations to improve their abilities to bring forth all of their information and experiences.

Information transformation can also cause adverse consequences for the industries workforces. The positive effects of transition implementation presents industries with a new concern; that is, workplace surveillance.

The increased scope and reach of workplace surveillance subjects employees to intense scrutiny and monitoring. These effects can cause adverse consequence because employees may feel uncomfortable in the conveyance of suspicion, distrust, and disobedience.

Disruptions of networks and isolation may also be increased due to realized monitoring.

Poster, (1990); Lyon, (1994); Bogard, (1996) provide descriptive adverse consequencial visions of the way in which surveillance is displacing bureaucracy as the principal mode of rationalization and control in contemporary life, particularly in the workplace. This pessimism stands in sharp contrast, then, with the messages of empowerment, devolved responsibility and the widespread reversal of repressive workplace control structures. A recurrent theme is emphasis on replacing the individual with teams as the basic unit of work organization. (Barley, 1990) Teams provide a means of working “smarter, not harder” and work itself becomes more effective and more fulfilling.
References


