

## Information Technology as Facilitator of Workforce

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### Abstract

*This paper explores the information age in reference to wellbeing of humans. The world is geared up for so fast pace but is it fit for the biggest population of blue and white collar workers. It explores the beneficiaries of this information era boom and its bruises. It doesn't underestimate the need of technology and information rather it explores talks about the direction and the falling panorama of the pace. Economy is the backbone and the trim tab of society. Capacity of making business is the edge factor. This paper is revolving around business in the context of information age and the abiding effects of it. The convolutions of this paper are containing the evolution of information technology in business, corollary evolution of human resources, further it discusses that at the end of information age whether the machines will serve humans or the humans will serve machine. With the employment of more and more machines to cope up with the competing speeds, the man is about to get free from regular work. Is it the goal of the world?*

**Key words:** Industrial Age, Information Age, Employability, Quality of Life



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### INTRODUCTION

Humanity grew because of technology. Hunter and gatherers could catch food for them because they came out with the technology of hunting, fishing and gathering wild plants to survive. They invented their own type of bow and arrow and poison-headed handbows in order to hunt effectively. Further they evolved into an agrarian society as they invented cultivation of crop through the use of plows and animals. Industrial society exhibited an extended division of labor and a reliance on large-scale production using power-driven machinery. Technological changes brought dramatic change in the form of information age. Every such age turned life easier, faster and safer.

Industrial age overlaps the agrarian age as the world was advancing in different phases. There are two industrial revolutions. The first occurred in Great Britain during the late eighteenth century and the second began during the mid-nineteenth century and was spotlighted mainly on the United States of America and Germany. Industrialization in America was especially important because it led to some crucial developments like transportation, electricity etc. Lucas's (2002) study found the following: For the first time in history, the living standards of the masses of ordinary people have begun to undergo sustained growth ... Nothing remotely like this economic behavior is mentioned by the classical economists, even as a theoretical possibility. (p. 109-10)

When industrial age knocked the door of the world, it brought havoc too. According to The Unabomber Manifesto (1995): The Industrial Revolution and its consequences have been a disaster for the human race. They have greatly increased the life-expectancy of those of us who live in "advanced" countries, but they have destabilized society, have made life unfulfilling, have subjected human beings to indignities, have led to widespread psychological suffering (in the Third World to physical suffering as well) and have inflicted severe damage on the natural world. The continued development of technology will worsen the situation. It will certainly subject human beings to greater indignities and inflict greater damage on the natural world, it will probably lead to greater social disruption and psychological suffering, and it may lead to increased physical suffering even in "advanced" countries.

The global information age is upon us and the practice of economic development is supposed to adapt to this new environment.

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The most obvious feature of information is the ever-growing quantity, kind and complexity of technological instruments and their constant change not only at an unprecedented scale but also at a barely manageable pace. The need, for others the pressure to adapt to this swiftly reshaping technology often ends up in discontent and revulsion for individuals and a panic for society as a whole.

According to Humbert (2007): Like the steam engine during the First Industrial Revolution, the Information and Communications Technology (ICT) has completely changed the way society organizes its economic activity. While the 18th or 19th century's machines replaced the manufacturing worker, the new "thinking machines" have been "increasingly capable of performing conceptual, managerial, and administrative functions and of coordinating the flow of production, from extraction of raw materials to the marketing and distribution of final goods and services. (p 2-3)

### **EVOLUTION OF INFORMATION TECHNOLOGY IN BUSINESS**

Agrarian age was mostly the age of exchange. Money or capital was less common. The commodities were raw material and their domestic usage. To create utility out of these two emerged industrial era. Even the basic amenities of life were not circulated to the masses. Soap and blade used to be the luxury things. The machines of industrial era started consuming the factors of production in the form of raw supplies, capital and scientifically trained human resource. The demand was heavy. Human resource has been started being utilized with the matching pace of machine. The revolutions settled the exploitation and by the time the world has matured the production technologies to produce enough for the buyers. It was the age of fulfillment.

Obviously, then comes efficiency - the information age as evolution not revolution. The connotation of wealth shifted from production to technology.

As Defense Science Board (1996) suggests, Fig 1 (Appendix): The United States formerly enjoyed a broad-based manufacturing foundation to support other infrastructures and conventional and nuclear forces. With the increasing dependence on information and information technology, that broad-based foundation has been reduced to a rather narrow base of constantly changing and increasingly vulnerable information and information technology.

The most important changes that technology has brought have been in the field of production and communication. If someone was out of the office, they were effectively out of contact. If you want some information, you will have to touch the point. The world of work has changed profoundly and it will continue to change in coming times too. As Stewart (1997) narrates: The new economy will transform the old and reduce its relative importance, but will not kill it. The Industrial Revolution did not end agriculture, because we still have to eat, and the Information Revolution will not end industry, because we still need cans to hold beer. (p 11)

Information was always present but the way information is being capitalized has never happened before. The most important asset and the key driving economic input in the information age is knowledge not capital. Research by Leavit and Whisler (1958) supports: Many business decisions once made judgmentally now can be made better by following some simple routines devised by a staff man whose company experience is slight, whose position on the organization chart is unclear, and whose skill (if any) in human relations was picked up on the playground...Such decisions may soon be made centrally by individuals whose technical skills are in mathematics and computer programming. (p 43)

In the information age, accurate decision-making depends on the immediate access to relevant information and advanced technology is rapidly making it possible. Peter F. Drucker (1994) discusses: While millions of low-skilled workers and an increasing number of suburban middle-income wage earners feel the bite of re-engineering and the impact of technological displacement, a small elite of knowledge workers, entrepreneurs and corporate managers reap the benefits of the high-tech global economy. This new social order in which inequality is based on knowledge represents a major challenge. (p 53-80)

Mass production has become mass customization in the information age. Leavit and Whisler (1958) analyzes: There will be many fewer middle managers, and most of those who remain are likely to be routine technicians rather than thinkers...One major effect of IT is likely to be the intensive programming of many jobs now held by middle managers and the concomitant "deprogramming" of others. (p 39)

In industrial age, the speed of change was sequential and noticeable within a lifetime period. In the information age, speed of change is part of our environment and is constantly accelerating. Culture and politics were protagonists of environment change. Now the global economics comes first. The switchover to information age brought changes to the human values, workplace values and societal values. As Davis Potter explains: My thesis has been that we are in the relatively early phases of a major economic revolution. This revolution is based around the concept of a post industrial era where making things is increasingly automated and routine; creating things is difficult and value therefore derives from creation and from the intellectual capital or knowledge base of the firm or nation. (p 7)

Hundley et al. (2001), With reference to the conference proceedings by National Defense Research Institute for National Intelligence Council, Washington on "The Future of the Information Revolution in Europe", the figure presents the close connection of information revolution with cultural, political, economic and personal dimensions. (p 25)

As shown in the Fig. 2 (Appendix), Information age technologies are changing the basic paradigms of humanity and have changed the way in every manner. Best enterprises of the world are internet businesses whose services are in the form of information, conduits of information or are acting in the role of an intermediary.

### **COROLLARY EVOLUTION OF HUMAN RESOURCE**

Knowledge evolution will involve many less-physical components and seemingly hazy topics such as experience and usability. They are standing tall in front of today's enterprises and they are becoming the prime cause of changeover.

In this paper, evolution of human resource practices due to information age are being sighted mainly for two perspectives:

1. Employability gap in present job opportunities and
2. The problems adjoined with new jobs

In India, according to International Labour Office (2010): Half of the country's population over the age of 25 has had no education and an additional third have at best primary schooling. Four out of five new entrants to the workforce have never had any opportunity for skills training. While enrolment in technical education institutions has increased (from 2.1 million in 2000 to some 3.8 million in 2005), there is a very high drop-out rate in these institutions. There is a huge shortage of teaching faculty in engineering colleges. At the same time, significant skills shortages are reported throughout the formal economy. In the information technology sector alone, the current deficit in engineers is estimated to be around half a million. (p 17)

In the information age individual workers are comparatively de-skilled in the production process and they have relatively less explicit and implicit knowledge of core of the business. The business is understood by the knowledge officer and a handful of top executives. Others have to do minute functions with little overall understanding of the production process as a whole. They work to fetch the information required by the top management. Well written in Deep Blue: As a result organizations could schedule, streamline and customize their production keeping costs down. The champion and computer met at the Equitable Center in New York, with cameras running, press in attendance and millions watching the outcome. The odds of Deep Blue winning were not certain, but the science was solid. The IBMers knew their machine could explore up to 200 million possible chess positions per second. The chess grandmaster won the first game, Deep Blue took the next one, and the two players drew the three following games. Game 6 ended the match with a crushing defeat of the champion by Deep Blue.

The machine defeated the man. It can do the directed job better, faster and focused. But the machine is man's product, its own brainchild. Man makes quiet good use of it as labor. Deep Blue further writes: This research gave developers insight into ways they could design a computer to tackle complex problems in other fields, using deep knowledge to analyze a higher number of possible solutions. The architecture used in Deep Blue was applied to financial modeling, including marketplace trends and risk analysis; data mining—uncovering hidden relationships and patterns in large databases; and molecular dynamics, a valuable tool for helping to discover and develop new drugs.

Lev Grossman (2010) writes: However, as demonstrated by Mark Zuckerberg and Facebook, it now seems possible for a group of relatively inexperienced people with limited capital to succeed on a large scale.

Leavit and Whisler (1958) writes: Perhaps the biggest step managers need to take is an internal, psychological one. In view of the fact that information technology will challenge many long established practices and doctrines, we will need to rethink some of the attitudes and values which we have taken for granted. (p 47)

Porter and Bostrom (1998) says: In 1960, the blue-collar workers represented 34 percent of the U.S. labor force. This rate dropped to 16 percent in 1997 and it might be as little as 5 percent by 2020. (p 237-257)

James Shirk further supports: Manufacturing employment has fallen by one-third over the past decade. Some Members of Congress contend that foreign trade has allowed American employers to offshore these jobs. In fact, technology has driven down manufacturing employment. Computers have made manufacturers more productive by automating many routine tasks. American manufacturers now employ fewer workers to produce more goods. This means less expensive manufactured goods, more manufacturing jobs for highly skilled workers, and the elimination of millions of low-skill assembly line positions. These same forces have reduced manufacturing employment around the world. Increased productivity led Chinese employers to eliminate millions of manufacturing jobs in the late 1990s.

Robots, automation, and software are replacing people. Very skillful artisans in the 19<sup>th</sup> century were displaced by lower-skilled laborers in factories. And now very skillful factory blue collar workers and white collar jobs of 20<sup>th</sup> century are being displaced by artificial intelligence. The majority of populations – the middle class jobs are right in the bull's eye. In developed countries even high skill work in education, law, medicine is stricken. Machines and intelligent systems are encroaching human skills in an unprecedented manner.

### **MACHINE SERVES WORKFORCE OR WORKFORCE SERVES MACHINE**

In industrial age machines were there to ease human resource to make them free from repetitive and arduous work, hence to help the humans to perform their task and concentrate on supervision for quality, consistency and more important and intelligent tasks. Mathias Humbert (2007): Karl Marx had already seen this underlying trend of capitalism when he published the Capital. He argued that the main producer's objective was to reduce labor costs and displace workers with capital equipment in order to get greater control over the means of production. Nowadays, with more and more market pressure on corporations, greater expectation of stockholders, pension funds and so on, the "wild" capitalism that Karl Marx was talking about 150 years before is facing the 21<sup>st</sup> century's labor force. (p 9)

Due to successive development of intelligent systems, man has become machine to help the machines perform their task. Barring handful of top executive, the entire knack is lying with machines; man is just feeding it mechanically with accuracy. He is losing his adroitness of doing and understanding the fine points of work. It is creating monotonous jobs which are hard on the physical, mental and emotional health of the man.

Technology is enabling consumerism in the form of customized production, upgraded versions and variants everyday that's pushing man to earn more. He works more to consume more. These bought supports just only compensate the time one has spent in earning more and bring some additional fringe joy. The earner is left with little time for self, buys machines for all things to be done, works more and more, gathers more and more but enjoys little and ultimately his life is also automated by the force of his needs and commitment for a so perceived goal of life. He loses awareness to the degree that he doesn't know where the diseases come from? What is he living for? He turns out to be an earning machine.

### **IS END OF WORK TRUE? WHOSE WIN?**

A day will come soon when there will be 95% of machines and 5% man to handle them. What will the rest of population do? And, of course, machines and their working is not organic, what affects it will make on the health of humans. Is the society moving towards the dependence on machines? What kind of physical, mental, and emotional health preparations should humans do to keep fit?

Standard of living and quality of life are two different gears. And the folly created in the machine age is intermixing them.

World Health Organization defines Quality of Life as individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment. (p 1)

Either we have lost above stated things in the rush of standard of living or are living with distorted forms of them just to justify our efforts in the settings around.

If we analyze Happy Planet Index result for 151 countries across the globe and consider the top seven countries to analyze the three components of Happy Planet Index Score i.e. Experienced Well-being, Life expectancy, Ecological Footprint Per Capita(gHa), we find different inventory in each category and a contradictory pattern in the three aspects in the growth of the countries. If the growth aspects are not balanced, Quality of Life is a faded dream with the dirt of self-doubt, ignorance, insecurity and obliviousness.

The fast pace of information technology is giving us an oblivion society. We are losing the joy of working and machines have developed the capability to handle our job efficiently. We are not much far when we would be idle and we will lose joy of working forever. Increased life expectancy, empty mind – devil's workshop, dwindling ecological balance, irrelevance of vision and purpose in the big part of world's population will lead us to a society which is sick and laid up, deranged and dependent.

## CONCLUSION

Contribution is a joy, not an act for compensation. Compensation is subscriber's contribution, his joy. An individual's, society's, country's life is one which it has visualized for it. Our vision is vitiated with consumerism and haste. Nobody has the complete picture and whosoever has drawn it complete, per se, they have reserved colors for blind race. Are we moving ahead so fast for a day when humanity is misbalanced? Do we have end in mind?

The information age has started making significant impact on the way life and society is. The practice of economic development is supposed to adapt to this new environment. It is time to understand the graveness of coming times and steering towards sustainable inclusive growth.

Though, on other side, it is claimed that this era is better than past eras. Refinement is the felt happiness but the end is most important. It can be more beneficial to do backward working starting from the end.

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APPENDIX

Fig. 1: The Foundation

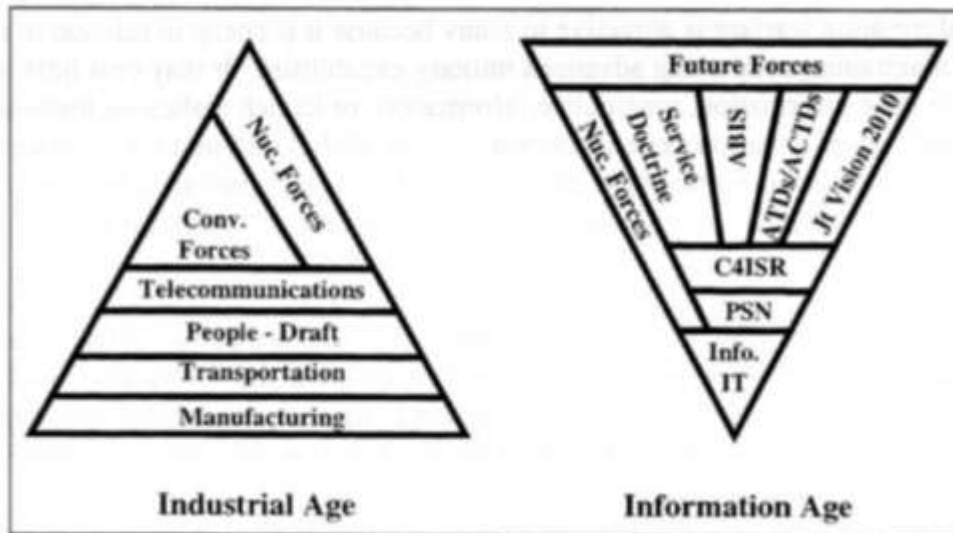


Fig. 2: The Information Revolution & Society

