Technological Innovations and The Promise of Change

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Abstract: Innovations right from the day of ushering the wheel have brought about changes in human lives. These changes are seen as improvement in the quality of life and reduction n human drudgery and efforts. Further with the growth of civilization and the spread of human settlements these changes have brought in comfort and conveniences for humans. But recently the changes in Technology, revolution in communication though computer, mobiles and the web have enabled humans to lead a more sedentary life and one of seclusion rather than inclusion. Humans developed as a social animal needing the cooperation and interaction of other fellow humans in the planet. Today thanks to technological advancements everything is at their finger tips and the need for physical interaction and communication has reduced or made nil. Does this promise a good turn of events for human lives? This is the theme of this research paper. If human beings have evolved as social beings with mutual contact and understanding, this development seems to be strange as it is just opposed to all that humans have stood for. The author feels this is time for retrospection and course corrections or is it irreversible?

Keywords: Innovation and change, Quality of life and human drudgery, digital technologies and consequential lethargy for physical activity, Future- irreversible?

I. INTRODUCTION

In highly industrialized societies, both capitalistic and communistic, the nature of technological and institutional innovations increasingly has come to influence the life pattern of the common man. The technological changes have influenced the external actions and internal experiences accumulated by the ordinary person on a daily and lifelong (biographical) basis. The ways in which technological and institutional innovations express their influence upon the life of individuals are sometimes obvious, sometimes a little obscured, sometimes rather subtle.

The accelerated divisions of labor, specialization of functions and tasks, and fragmentation of human transactions required by so many modem technological and institutional innovations and the pace at which such innovations appear, have contributed greatly to the disorientation, lack of coherence, and alienation sensed in one way or another by large segments of the population. The extreme role specialization dictated by technological innovations and the consequent growing infrequency with which individuals interact with one another in specialized roles instead of as people has tended to make personal identification more a matter of what one is than of who one is. Moreover, since so many of the technological and institutional innovations that require highly specialized activities is centrally administered by the physically distant bureaucracies of larger economic and governmental organizations, individuals communities feel frustrated and powerless. And, due to their inability to influence their immediate environment, they consequently often withdraw into political inaction and other forms of apathy.

From a different perspective, the scale of activity and organization often inherent in the operation of modem technological innovations have created a widespread antagonism toward large scale activities and organizations and the metropolitan complexes that house them. This has induced some to seek "simpler" environments and contributing to the quite noticeable population gains occurring in some rural and peripheral metropolitan areas. More traditionally, it has been recognized by thinkers that technological innovations leading to automation in the realm of manufacturing (and elsewhere) convert workmen into "parts of a living mechanism," putting their movements at the command of machines rather than vice-versa, and making them subject to strict time discipline

Figure 1; Innovations that do not bring the promised change

Technological innovations have promised changes which to some extent have made industries and companies competitive, but sadly do not seem to have reduced the burden on humans. Innovations and technological changes have resulted in loss of jobs, reduction in manpower and created need for more training and development of people.

While some organizations have been able to successfully adapt to these changes, others have found it difficult. One of the reasons for this chaos is that the technology has not resulted in improving the conditions of living of the average man. He has to make a lot of adjustments and by the time he has changed, he finds there is no job because the technology has advanced much faster. This overlap in adaptation between the new and old technologies and the lack of time for the organizations to wait and respond has created this gap between the promise and the actual realization.

II. OBJECTIVES AND METHODOLOGY

Business Environment is characterized by frequent changes and the most important among them being change in technology that impacts all facets of business. Technology mandates various changes at organization level and affects human resources significantly. Technological changes are welcomed on the one hand by organizations to be ahead of competition and the much touted conservation of resources. But this results in a lot of distortion for current employees in the form of new job requirements, training and sometimes the pink slip. This research paper analyzes the various consequences of technological changes and the organizational preparedness to adopt. Such promises of change for the better is not to be lost between the "Cup and the lip". This research paper will focus on the following specific objectives.

1. Developments in the business environment leading to innovation and change
2. Assessment of Environmental factors relating to technology and innovation.
3. Impact of innovation and the promised changes in organization
4. A review of challenges and how organizations cope with this phenomenon.
5. Futuristic scenario and how organizations may be prepared.

A quick review of available literature gave the confidence to undertake a detailed search and review of relevant literature to focus on the above research objectives. However the data compilation, collection, classification and review were an involved exercise but have been successfully done. Several questions were thrown up during data analysis and the author was able to find suitable answers to some of the same through a thorough check and review of literature under consideration. Findings and conclusions are given at the end of this paper. The author hopes that further research will be carried out in this area of critical importance for future generations of people.

III. REVIEW OF LITERATURE

Time and geographic realities, and especially the local connectedness of seemingly unrelated events and activities, are surely impacted by technological innovation on the life pattern of its users and consumers, as well as others, that are much more varied and profound than those identified by conventional forms of innovation assessment that normally focus almost entirely on myopic economic advantages and horizons. Regardless of personal concerns, a seeking of some understanding of these manifold impacts would appear to deserve a very high priority among scholars in highly industrialized societies, whether capitalistic or communistic; for it is in these societies where the greatest inroads into the life pattern of people already have been made by the centrally controlled projects and independent roles of technological and institutional innovations, and where such innovations will probably continue to spread more rapidly in the foreseeable future.

Figure 2: Environment causing paradigm shift in business focus

The need to cope on a day-to-day basis and the need to comprehend one's own immediate life and environment in a world where one is confronted by an often confusing succession of technological and institutional innovations would also appear to be sufficient grounds for seeking some understanding of the life-content impacts of such innovations. Yet, with very few exceptions, the geographers of highly industrialized countries have been content to confine their study of technological and institutional innovations to questions pertaining either to the diffusion of isolated innovations (which are normally assumed to contribute to "development" and "progress" rather than mere change to the spatial structures and organization generated by single innovations. A detailed assessment of the impact of such innovative technologies and consequent industries has not been made. While progress of certain sections of society has been noticeable, larger diffusion of such benefits are yet to be identified.

Before that happening, mankind has hoped from one innovation to another before assessing the consequences on the lives of common people who are squeezed to find resources for such mindless technological advances.

"Change is ongoing in organizations as new ways of working replace, reshape and overlap traditional structures. New working environments are sought where people can contribute their creativity and where new ideas can be nurtured and developed into further innovations that transform organizations and lead to the production of new commodities and the delivery of new services. Change, creativity and innovation represent key processes to organizations operating in the 21st. Century." (Andriopoulos and Dawson in "Managing Change, Creativity and Innovation)

A time-geographic approach to the study of existing or proposed technological and institutional innovations allows their actual or potential life-content impacts to be dealt with in both a humanistic and a deductive manner. It allows insights into activities and experiences to be gained in terms of integral human lives, rather than lives that have been fragmented into arbitrary and rarified socio-economic categories. It allows dissimilar events and activities to be glimpsed in terms of their full societal impact, in terms of collateral processes and the intricate local connectedness of people and things, rather than in terms of disciplinary vacuums created, and often stubbornly preserved, for analytical convenience However, whatever a time-geographic perspective on technological and institutional innovations is capable of accomplishing, it can neither provide definitive answers nor address itself on its own to all the possible questions that might be raised concerning the day to day impacts of such innovations. For one thing, the full circle of interdependent daily life and life paths impacted by any innovation is too complicated to be dealt with in its entirety; although the application of appropriate models and rather meager empirical data on activity timing and location will allow a lot to be said about the permitted and omitted path elements of either actual persons or representative hypothetical individuals. Furthermore, although the time- geographic approach can conceptualize the interrelationships between a person's accumulation of internal mental experiences and the external corporeal actions that constitute his daily and life paths, it cannot actually reveal the mental experiences, or internal life-content impacts, stemming from any technological or institutional innovation. Finally, some of the life-content impacts of technological and institutional innovations either cannot be addressed directly by time-geography (as in the case of traditionally assessed economic well-being impacts), or probably can be dealt with best through complementing time-geography with other relevant conceptual frameworks (as in the cases of alienation and the appearance of certain forms of collective protest.

Figure 3: Innovations and slow process of change

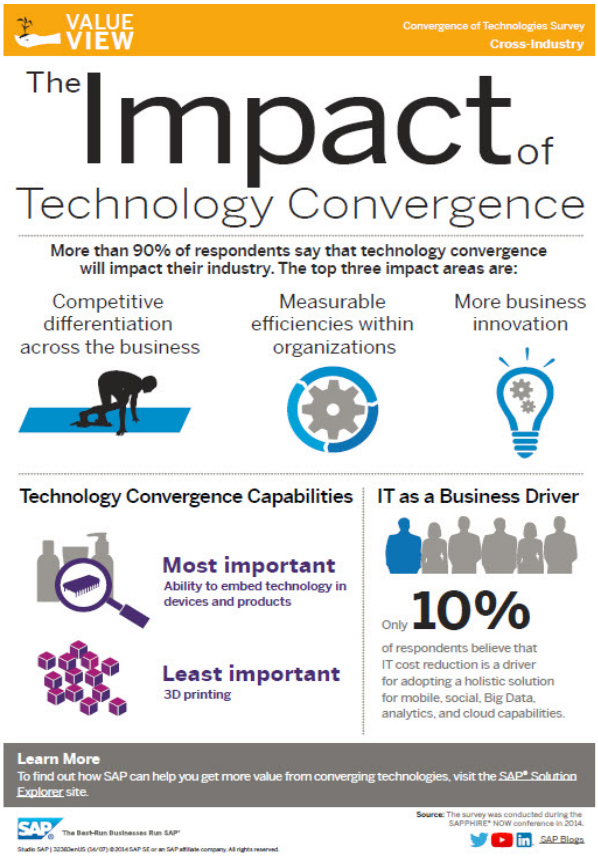

Figure 4: Impact of technology in organizations

The quicker capital could circulate, turn over, and accumulate, the more feasible it became for entrepreneurs either to expand the scale of their existing operations by investing in more fixed capital and physical inputs and possibly hiring more hands; or to invest in completely new manufacturing facilities ***(technological innovations)*** that were large-scaled in nature, involved a finer division of labor (i.e., more specialized individually existing roles), and aided the fast turnover of capital by cutting down the time needed to produce a given quantity of goods. The

scale-economy manufacturing at least partly facilitated by the telegraphs influence on capital accumulation could exploit the market-area expansion possibilities offered by the concurrently expanding railroad network. For this and other reasons (including agglomeration economies), such manufacturing tended to concentrate in large cities at the expense of much rural and small-town industrial employment In short, through contributing to the adoption of a great variety of indirectly linked manufacturing innovations, new industries (like the telegraph) reached into the life content of hundreds of thousands of people by, among other things, helping to mate or destroy production projects (each with its own employment multipliers) and significantly altering the population system-activity system matching process in most local areas.

Although they have extensively studied the diffusion of *innovations, human geographers hardly have looked into the very important question* of *the human and societal impacts that follow the adoption* of *technological and institutional innovations*

Online Contact Accelerates Relationships: A Case Study

"Stan" married his college sweetheart. After two months of marriage, he walked into the home office to find his wife chatting with someone on Face book. She assured him the guy was just a friend, but Stan soon saw the person's name all over his wife's news feed and posts. Not long after, she traveled to meet the man – staying at his place. Their child was born within a year after the visit. Stan sees that whole relationship as something that started and developed entirely online. He's convinced his ex-wife's behavior would have manifested at some point, but technology drove the two of them apart faster. Stan's new relationship started through an online dating site, but he quickly moved it into the real world. He's understandably not a fan of developing relationships through social media. All in all, the impact of technology on human interaction paints a pretty gloomy picture. But it's a valuable discussion to have, as it teaches us the value of balancing our offline and online communications with others – personally and professionally. Is this a too-dismal view of technology in human relationships?

Whatever the particular ways in which a specific technological or institutional innovation may affect the life content of a person (see figure 4), whatever the mental experiences and reactions it generates, it will always carry a two-fold general impact. First, it will require interaction with other humans, man-made objects, or elements of the natural environment. Second, it will make claims upon that most inflexible limited resource of an individual-real sidereal, or measured, time. This two-fold demand, in turn, means that the impact of technological and institutional innovations upon individual life content is usually far reaching and profound in ways that are apt to be totally missed by those who assess innovations solely in economic or outwardly ideological terms of one kind or another. With time people accept change in technology and support.

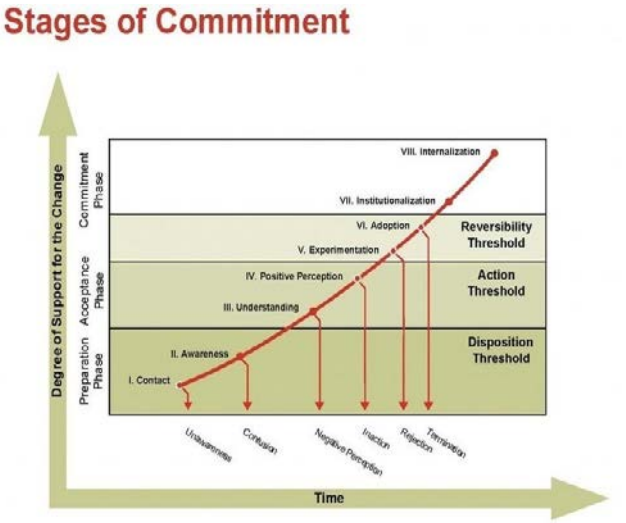

Figure 5: Degree of change and commitment of people

Industry leaders have pointed across various industrial categories that technological changes have impacted their business. There are three distinct areas that technological advances converge to impact. They are:

- Competitive differentiation across the business
- Measurable efficiencies within organizations
- More business innovation

Farmers have begun to use agricultural drones adorned with cameras to improve the treatment of their crops. The drones allow farmers a unique perspective that previously-used satellite imagery could not provide. They help to expose issues with irrigation treatment, soil variation, and distressed plants at a much lower cost than methods like crop imaging with a manned aircraft. The success of the drones is made possible by technological advances in GPS modules, digital radios, and small MEMS sensors. Together, these advances allow farmers to bring greater precision to their craft in order to reap greater rewards.

Silent Circle, a Maryland-based company seeks to provide an alternative encrypts clients' voice calls, text messages, and file attachments. Encryption prevents potential eavesdroppers from listening in on phone calls and protects metadata. Silent Circle has big plans for the future including a secure smart phone called Black phone. Black phone will utilize encryption tools currently used by Silent Circle, as well as other software that will help secure data. One barrier to mainstream use of renewable energy system is integrating sustainable energy sources into the current power grid. Big data and artificial intelligence have made it easier to predict how much power wind turbines will

produce. Anticipating power fluctuations is key to developing technologies for integrating wind and solar into the power grid.

Figure 6: Humans do not change with technology!

Many companies around the globe are working towards blurring the lines between biological systems and man-made creations. Qualcomm is making significant steps in developing artificial intelligence system with the use of neuromorphic chips. These chips blend neurology into traditional technologies like smart phone chips. Qualcomm is already testing chips in small robots that allow the machines to perform tasks that typically require a custom computer. The chips can process sensory data through sight and sound in order to respond in ways that are not explicitly programmed.

The current infrastructure for collaborating in a professional environment can be counterproductive to getting work done. This problem is one that new apps like Quip aim to solve. The intent is to develop a system where every step of the collaboration process happens in the same digital space. It aims to create a more intimate experience by implementing chat features and a Face book-style news feed, in turn creating a more collaborative experience. These new platforms aim to improve the efficiency and productivity of current workflows.

Taking a single step requires balance, coordination, force, and direction. Each of these factors has presented unique challenges for engineers designing robots that can walk. Enter Boston Dynamics who have experimented with the "dynamic balance"—a feature that allows robots to maintain balance while walking. Recently, they successfully created a robot that can walk across uneven and unsteady terrain. This new innovation opens doors for the greater use of robots in emergency operations or helping elderly and disabled individuals with chores and daily tasks. While the technology is still in the developmental stage, Boston Dynamics knows that the robots need to walk, before they can run.

Apple is the master of consumer driven technology convergence. They were the first to release a cell phone with a multi-touch interface that combined multiple technologies and functions to eliminate the need to carry many separate single-function devices. It set the wave in motion for many to follow and further innovate. This, however, is just one well-known example of converging technologies with capabilities that impact so many on personal and professional levels. For organizations the convergence of technologies is, and has the potential for so much more. Imagine a future where devices and machines communicate with each other without human intervention and can perform synergistically to accomplish tasks that would otherwise be extremely complicated, cumbersome and time consuming. Well, the future is here and these things are possible.

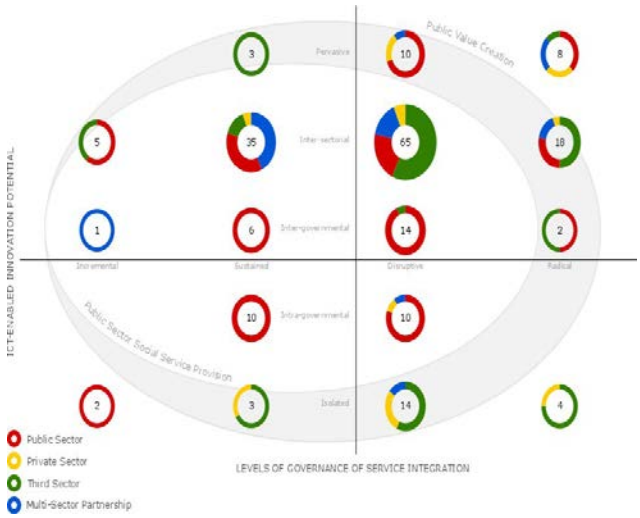

Figure 7: ICT Enabled Innovation

ICT-enabled social innovation stands up as a powerful means of integrating services across administrative or government layers. It facilitates partnerships and helps to achieve three key policy objectives: increased access and take-up of services; improved quality and efficiency of services; and wider and more personalized access to the most disadvantaged.

As a corollary to the context issue, there's an utter lack of empathy when using technology to interact with others. "I'm so sorry your ___ died" or "I heard you lost your job; I feel for you." Where is the compassion and solidarity with loss? It certainly does exist within the soul of the person who texted, posted or emailed this – but words don't convey that. Sometimes you just need a hug, a handshake or a pat on the back. Sometimes we fail to realize that, as humans, we're also animals that need personal touch. Technology has become an electronic addiction for some, taking them out of the physical world as they cling to the features it offers. And like many addictions, there's an impact on the number and quality of human relationships. Conversations through social media and email take the place of traditional interactions and discussions; eventually, a person doesn't even need to

leave the house to communicate with others – and many people won't. The cocooning phenomenon leads to social isolation that can be crippling for some.

IV. DATA ANALYSIS AND CONCLUSIONS

Business Environment is always dynamic and there is no dull moment. Dynamic changes usher new requirements for society in terms of convenience and time saving features. Innovation starts with small scale developments to suit new expectations from consumers, but gradually becomes more challenging as competition intensifies. Today the environment is characterized by devices and mobile Apps to reduce the drudgery of human beings. One of the expectations of such changes from Innovations and Technology is how human lives can be more exciting and convenient, less tiring and with more leisure time for other activities than earning the livelihood.

Several factors in the environment are responsible for this change. The geographic spread of human population has made transportation an essential feature of daily life. Not only the parents but children also need to travel for their schools and colleges which may not be so close. This apart from the fact that both parents need to be wage earners has put tremendous pressure on the family time and orientation. Today the parents, office goers and students and other youngsters depend on their mobile or other devices to communicate with one another and the person to person direct contact is lost. We as humans tend to assume that it is the collective wisdom of society that decides the course of progress. But the truth is sadly different if one critically looks at the past. The destruction and disturbance to family life produced by innovations and technology has been overlooked by the obvious glitter and profits made by multinational corporations. Some sections of society have been made rich, but has the society at large been benefitted by such innovations? This is the moot question, the response to which has to be obtained from society at large and individuals affected. One needs to critically review the organization of society in Social or communist or so called democratic forms. The real GAP between the haves and have-nots have widened with widespread poverty looming at large in developing societies.

It is true that organizations have responded to societal needs by making structural change. But these changes have remained cosmetic in the face of human needs and wants. High speed travel (For which Technology and innovation are working overtime almost in all countries!) has replaced slow motion, but the traffic jams and time required to reach office has only increased. Is progress to be decided by the speed of travel or the time spent with family members and leisure for pursuing art and other forms of relaxation? The family itself is disintegrating to give place for new forms of social and personal lives! Organization structures and outlook have changed but the promised changes in human lives are still awaited!

Organizations are going from one myth to another in a continuous procession filing up the coffers of stock holders and institutions that have helped them along by financing their ventures etc. While this corporate responsibility is appreciated i.e. giving a reasonable return to share holders, returns to society which has enabled the corporations to come up and grow need to be looked at seriously. This will remain a challenge of futuristic organizations Stake holders of futuristic organizations, while living in a digitalized world do know that their survival and growth means relevance to society in terms of socially responsible products and services!

Organizations know that they have to be continuously embrace socially conscious activities or else they would be caught with their 'pants down'. As long as their customers and other stake holders perceive them as custodians of societal confidence, they will be a growing concern. Future organizations will have to incorporate the aspirations of society through their business plans and implementation.

V. RECOMMENDATION

Innovations and Technology ushers changes in the day to day lives of people. The impact of innovations cannot be measured only by Profits generated to organizations but how it has improved the lives of common people. The impact of innovations has to be positive and lasting so that people are benefited by it. In many case this measurement is rendered difficult and generally tends to be measured in terms of more profits generated for companies implementing such technologies. In many cases sighted in the review of literature, it is found that rail road companies have displaced many traditional occupations and the impact of telegraph has also been similar in USA. At home the impact of DDT on soil fertility and the impact of gas leakage and tragedy at Bhopal due to Union Carbide and Enron are examples to remind us how to tread carefully. But the loss of jobs due to the impact of soft ware and mobile technologies need to be assessed quickly and the social consequences of mobile technologies need a fresh assessment.

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