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STRATEGIC MANAGEMENT OF CHANGE AND CONTINUITY: CASE OF TECHNOLOGY AND SOCIAL CAPITAL IN INDIA

Jyoti S. A. Bhat*, Sushil and P K Jain*****

ABSTRACT

The importance of social capital has gained significance ever since researchers have drawn attention to its important contribution to economic and social advancement, and it is now treated as a key independent source of wealth creation. Universally, technology is accepted as a key architect of change. Developments in technology are continuously leading to change, calling for newer and better methods to deal with the resultant transformations. In India, as in other countries, changes wrought by technology are very evident. Technology has also, inter-alia, impacted relationships, and thus, social capital.

The paper attempts to provide a glimpse of the relationship between managing change and continuity in respect of social capital and technology, taking the case of India.

Keywords: *Social Capital, Technology, Service economy, Technology management, ICT*

1. Background

Social capital, coupled both with technology and traditional assets of land, labour and financial resources, has been known to have a major role in bringing about economic and social development. In recent times, it is more specifically being recognized that social capital is a distinct asset in itself.

Technology is seen as an enabling force for the creation of relationships. With advancements in technology, interactions and new forms of cooperation have blossomed out of sheer necessity. Networking has become ubiquitous virtually in every walk of life, from business organizations offering products and services to academic institutions to consultancy.

* Advisor, Department of Scientific and Industrial Research, Government of India, Technology Bhawan, New Mehrauli Road, New Delhi 110 016, INDIA (Tel: 091-11 26960098/26590256; Fax: 091-11 26960098/26960629; Email: jsabhat@nic.in)

** Professor, Indian Institute of Technology, Vishvakarma Bhawan, New Mehrauli Road, New Delhi (Tel: 091-11 26591171; Fax: 091-11 26862620; Email: sushil@dms.iitd.ac.in)

*** Professor, Indian Institute of Technology, Vishvakarma Bhawan, New Mehrauli Road, New Delhi (Tel: 091-11 26591199; Fax: 091-11 26862620; Email: pkjain@dms.iitd.ac.in)

The views expressed in the paper are those of the authors and are not necessarily those of the organizations they represent. The paper draws on the data contained in a research study report brought out by the ***Technology Management Division*** of the Department of Scientific and Industrial Research (DSIR) in the Ministry of Science and Technology, Government of India.

It is now widely recognized that a number of complex issues have arisen out of globalization. Quite evidently, 'change' brought about by technology advancements needs to be managed. At the same time, 'continuity', as represented by social capital, is also to be managed. Thus, an appropriate strategy is called for to manage these dual aspects representing change and continuity.

Among early researchers, Hanifan (1916) had described social capital as those tangible substances that count for most in the lives of people, namely, goodwill, friendship, sympathy, and social intercourse among individuals and families who make up a social unit. In his words, "If (an individual comes) into contact with his neighbors, there will be an accumulation of social capital, which may immediately satisfy his social needs and which may bear a social potentiality sufficient to the substantial improvement of living conditions in the whole community". Subsequently, many researchers from different streams have elaborated on aspects of social capital.

The specific role of social capital in development of human capital has been highlighted by Loury (1977, 1987) and Coleman (1988). Baker (1990) has brought out the impact of social capital on economic performance of business organizations.

Broadly, social capital has been seen variously as (i) an individual resource, i.e., as a skill or knowledge possessed and nurtured by certain individuals that is deemed a private property by Meyerson (1994) and Burt (1998); (ii) a social resource or more as a public property based mainly on institutionalized relationships of mutual trust, acceptance and recognition by Bourdieu (1992) and Putnam (1993); (iii) an organizational resource as a driver of collective intellectual capital by Nahapiet and Ghoshal (1998); (iv) an inter and intra institutional resource by Salazar and Dornbusch (1995).

Technology is changing at a very rapid pace compared to earlier times. Life cycles for processes, products and technologies have been reducing. Under these circumstances, it has become necessary for nations, enterprises, organizations and even individuals to continually track and understand these changes. In other words, it has become an absolutely essential necessity to respond to these changes in order to remain competitive.

Other kinds of changes have been wrought on account of these developments. For instance, employment patterns have changed drastically. Most striking is the shift from the agriculture sector to the industrial sector, including the service sector. This calls for a change in training, skill levels, temperament, wages, work styles and organizational cultures. More importantly, nations have had to frame suitable policies to factor this.

Consumer behavior is another factor that has undergone significant changes. While the consumer was earlier at the receiving end, expectations of better quality at more competitive prices have now become the general norm. Consequently, industrial enterprises from many nations (both from the industrially advanced ones as well the rest) are equally in the fray to capture customers and garner market shares.

Sushil (2005) has delineated that there is need to provide for a strategy that merges a 'proactive/intended strategy' with a 'reactive/adaptive strategy' to accommodate change, which is inevitable. Nations need to provide congenial environments for competitiveness comprising essentially a sound economic system, strong technological capabilities and the ability to trade with other countries. The general status of education, and research and development capabilities are important determinants of the technological capabilities of a nation. The important role of efficient mechanisms to finance technology and thus facilitate sustained development through innovations has been highlighted by Kumar and Jain (2003).

While each nation is responsible for its own economic system, the World Trade Organization has been set up to regulate global technology trade. With the realization that technology leads to creation of wealth getting accentuated, the importance of having access to technologies being developed elsewhere, as well as being able to manage technology at all levels has never been underscored more. In this process, social capital is undoubtedly a key ingredient that has a major role to play in the creation, growth and development of mutually beneficial cooperative global ventures, paving the way for economically progressive and competitive nations.

Information and Communication Technology, an Emerging Technology

Emerging technologies broadly refer to new and potentially disruptive technologies such as nanotechnology, biotechnology, information and communication technology, cognitive science, robotics and artificial intelligence. Emerging technologies have major implications on economies and they have special characteristics (Bhat, 2005). Information and communication technology (ICT) is widely seen to be one of those emerging technologies that are transforming economies. ICT is also recognized as an enabling technology that provides for far greater participation in service related activities than possible earlier. This impact is being felt in India also.

ICT in itself has advanced so rapidly that it has given rise to services occupying a key role in the economies of countries, while also affecting business and society at large. In most OECD countries, a large percentage of the total economic activity is accounted by services. Increasingly, the growth of the service sector in most economies is much faster than the overall economic growth rate of a nation. This is attributed, in large measure, to those services linked to ICT. The bundling of manufacturing and services has become inevitable, as services are being embodied in manufactured products.

Social Capital

Social capital is undoubtedly an important resource, in particular for the service sector. The service sector thrives on networking and relationships. In the service sector, it is vital to offer a particular service to a customer effectively. It is, therefore, important for any organization to have an effective network of communication to be able to respond to a particular situation within the shortest timeframe. Effective intra-organizational networking is an imperative necessity. Apart from the various interactions within an organization, the manner in which organizations interact with each other to forge mutually beneficial relationships is equally important. The social capital that resides in both of these is particularly important.

Different researchers have brought out the various benefits of social capital; these bring out that social capital is an important asset in which resources such as finance, time and energy can be invested but the returns from which are very uncertain. It has a conversion capacity that can lead to economic benefits but is not liquid in nature. As continual efforts are called for to keep relationships thriving, social capital is required to be maintained to yield benefits; the kind of social capital would change depending upon the situation concerned. In terms of durability, flexibility and reliability, social capital can be different in different situations. It is important also since it can be used in place of another asset such as finance or human skill and can have a major impact on transaction costs.

2. Objective

The objective of this paper is to present the results of a research study undertaken primarily to analyse the impact of ICT, an emerging technology, on social capital; the study is based on a survey undertaken of individuals and organizations located in the coastal Karnataka region of India. This region was selected because the field researchers were then based in same region,

and access to primary data was possible. The study was based on extensive desk research, field survey and expert opinion polling in the surveyed region. It may be hypothesized that the selected region has a higher social capital compared to the national average. The reason is that historically, private enterprises, ably supported by the local inhabitants, have played a major role in creating and developing a vast and vigorous service infrastructure in this region (distributed amongst education, healthcare, banking, hospitality, finance and other services).

Structure of the Paper

The broad rationale has been presented in the initial section covering the background and an introduction to the key concepts. This section includes major references in literature that have had a bearing on the paper.

While section 3 delineates the approach followed in the paper to interpret the data, section 4 contains the major findings. Finally, the conclusions and major limitations of the paper are enumerated in section 5.

3. Approach

There are several definitions of social capital. However, for the purpose of the research work, it has been chosen to focus specifically on the aspects of networking by individuals and organizations. The research set out to examine those aspects of a network that provides organizations an opportunity to interact, resulting in enhancement of mutual effectiveness, through ICT. Different kinds of organizations, categorized as businesses, professionals, service providers, Non-Governmental agencies and Government Departments have been specifically considered.

Three dimensions of social capital have been focused upon: the (i) structural, (ii) cognitive and (iii) relational dimensions.

The *structural dimensions*, drawing mainly from Nahapiet and Ghoshal (1998), relate to those that can to be put into place by the designer of the system. These thus cover different sub-dimensions that include information benefits, network configuration and network appropriability.

Information benefits further refer to both access and timing, denoting the ease with which contacts get accessed in a network. Information benefits are also embedded in referrals, denoting the enhancement in credibility or authenticity of individuals linked in a network.

Network configuration, in turn, relates to density, connectivity and hierarchy. Density is a measure of the inclusiveness of the network. Connectivity refers to the degree to which the members of the network are linked together. Hierarchy denotes the number of layers to be penetrated before reaching the person to be communicated with.

Network appropriability refers to the access of an individual to new networks by virtue of access to an existing network.

The *cognitive dimension* is dependent on the cultural infrastructure and can be enhanced through use of language or through symbolic means. Sub-dimensions under this are shared codes, narratives and norms.

Finally, *Relational dimensions* are embodied in trust, expectations and identity. Trust refers to the willingness to be vulnerable to another and expectations to clarifying and communicating what is expected of the other person and *vice versa*. Identity provides for defining oneself.

One of the direct ways ICT affects social capital is through facilitating communication between individuals and organizations. Another way is through the formation of associations as in the case of chat groups or electronic bulletin boards. Also, ICT enabled services of various kinds

following different kinds of business models from brokerages to collaborative platforms, have different kinds of impact on social capital. These are all analyzed in typical situations using qualitative research methodology.

4. Survey of People

A survey of 150 individuals from the region was conducted in 2005 after carrying out a pilot survey of 30 respondents. The organizational assessments were also carried out in respect of the different categories through interviews on a one-on-one basis.

The survey was directed towards profiling the individual users of ICT having a dominant effect on social capital, determining the impact of ICT on the several dimensions of social capital as viewed by the respondents and to pinpoint the typical use of ICT that led to enhancement of networking and increased interaction. The assumption made was that ICT was best represented by internet, and efforts to target existing users of internet were made. The technique of snowball sampling, which relies on referrals from initial subjects to generate additional subjects, was selected. This was because of the small user base and also because no authentic data base, listing the users of computers or internet, was available. Thus, it was felt to be the most appropriate method after careful consideration of the situation.

Nearly one-fourth of the 150 respondents (37) were belonging to computer related fields; they were career counselors, computer instructors, network administrators, software programmers, web designers, software engineers or computer operators or belonged to allied functions. One-fifth of the other respondents (30) were students and a nearly equal number was into teaching (28). The other respondents include those who had their own businesses (16), blue collared workers (10), mangers/professionals (8) and a diverse group (21) constituted of artists, consultants, homemakers, and even farmers.

Inter Individual or People to People/Professionals Interactions

The results of the survey indicated that email was the most frequently used form of communication compared to chatting or internet telephony or electronic greeting amongst individuals.

a. People to People Interactions: This form of networking covered interactions among company/ organization personnel, business related individuals, customers, job consultants, students, great personalities and others, apart from those between family members, friends, relatives and colleagues. In their interactions with other individuals, the findings indicated that the respondents felt that ICT contributes to social capital in a moderate way. Using a 7-point Likert scale, the extent to which ICT was seen to impact social capital, as considered by the respondents, was measured.

   Between the three dimensions of social capital, the respondents felt that the cognitive dimensions would be the most affected and the relational the least. Thus, it can be inferred that internet usage would lead to higher creation of shared codes and norms than to enhancing shared conviction or creation of mutual trust.

   The findings also indicated that students, followed by those in the teaching profession and by the computer related professionals in that order, perceived the importance of ICT to the maximum extent. The others did not as readily see the impact of ICT. The findings are as depicted in Figure 1.

b. People to Professionals Interactions: The survey indicated that individuals did not use the internet to keep in touch with professionals in a major way. Nearly one-third had been in

touch with doctors, architects, chartered accountants, lawyers and other specialized personnel at different points of time. Besides, the practices of looking up websites hosted by professionals, or posting suggestions, were also quite rare.

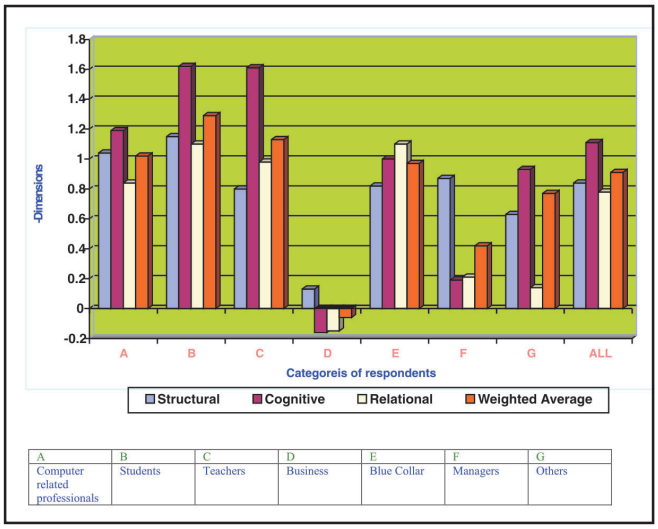

Figure 1. ICT's Impact on Social Capital: Individual Respondents

Interactions between Individuals and Organizations

The findings are categorized further into those aspects concerning linkages with different types of organizations.

a. *People to Business Interactions:* As regards how individuals rate ICT related services; data relating to different kinds of services including shopping services, banking services, financial services, travel services, employment and education related services were collected.

   Shopping services covering online shopping preferences, concerns and kinds of products purchased or sought were analyzed. It appears that on line shopping is being opted for purchase of mainly books, computer related purchases, electronic or hardware appliances, clothes and accessories, and other miscellaneous personal use items. The major apprehensions expressed by the respondents related to misuse of credit card information and not finding the vendor trustworthy or the ultimate product of desired quality.

   Banking services seem to have a very moderate penetration with around two-thirds possessing ATM Cards and nearly one-third of the respondents using online banking facility. Very few used the provision of online banking for actual transactions and a major use was for checking balances or for downloading statement of accounts.

   ICT enabled financial services dealing with Demat accounts, online buying or selling of equity and other financial instruments were utilized by about one-third of the respondents. However, only a very small percentage of the respondents did actual buying or selling over the internet.

   In respect of ICT related travel services, about two-thirds used this facility for making enquiries. However, only one-fifth of the respondents had used the internet to do actual bookings and this was mainly for making railway bookings.

   For information on ICT enabled education and employment related services, information on

usage of employment web pages, online test facilities and trust in media information was sought. It emerged that less than half of the respondents used the internet for employment related aspects. Out of them, only very few used it regularly. It is important to note that these users found the practice very useful. An overwhelming majority of the respondents (85 per cent) had never used on line tests and those who did use this facility mainly did so for intelligence, personality, entrance, technical or employment tests. Nearly one-fourth of the respondents did rely on information obtainable over the internet as it was mainly perceived to be frequently updated and readily accessible.

b. *People to Service Providers Interactions:* Linkages of individuals with service providers were also analyzed. For this, data relating to contacts of individuals with educational institutions was drawn upon. The survey indicated that more than half of the respondents maintained contact with educational institutes. Of these, more than one-third used email to be in touch with the institutes, in preference to other communication means. The sites visited were primarily those of management or engineering institutions or other regular or distance education institutes.

c. *People to Non Governmental Organizations Interactions:* The survey indicated that linkages of individuals with Non-governmental organizations through the internet have hardly been developed.

d. *People to Government Departments Interaction:* Nearly two-thirds of the respondents had no contacts with Government Departments over internet. Even in the case of the remaining one-third of the respondents, a relatively small percentage had used the internet to correspond with Government Departments. However, it is gratifying to note that more than one-fifth did visit the websites of Government Departments to seek information. Those who visited the websites did so primarily for education related information and rarely for administrative function related information.

Survey of Business Organizations

For the purpose of the research, 20 business firms located in the region were contacted. Information on the use of internet in four major groups was studied:

a. ***Means of Sourcing and Communication with Customers, and other Associates:*** This seems to have limited use at the time of survey. Constraints such as relatively lesser use of computers, lack of internet density and unfamiliarity with use of internet, were among those cited by the respondents that did not enable businesses in reaching out to customers and associates. While certain businesses are thriving on the extended communication linkages even with counterparts in countries abroad facilitated by internet, some who are predominantly used to servicing local needs have not yet experienced advantages.

b ***As a Tool of Communication:*** The survey indicates that the usage of internet is quite modest. The use of other forms of communication such as mobile phones were found to be more handy and speedier in terms of getting a response amongst most of the businesses surveyed.

c. ***As a Tool of Association:*** The responses indicate that email is used extensively to send notices and messages.

d. ***As a Means for Delivery of ICT Enabled Services:*** Many of the businesses surveyed utilized the internet for several ICT related services such as banking, share transactions, travel bookings. But they had not made major use of the internet to provide ICT enabled services themselves to potential or existing customers.

Survey of Professionals

For this purpose, professionals from professional bodies were drawn. These included local chapters of bodies such as the Institution of Engineers, Indian Medical Association, Institute of Chartered Accountants of India and the Bar Council. Lawyers, doctors, architects and chartered accountants were among the professionals surveyed. Thirty professionals were surveyed in all.

The broad findings across all the professionals are that internet is used for communication amongst professionals as well as with their clients, in particular with those based in foreign countries. Even documents are exchanged using internet. Internet is also used by professionals for keeping themselves updated on information. The practice of scanning the websites of the associations and professional bodies is quite prevalent.

Survey of Service Providers

The immediate impact of ICT was seen to be predominant in the field of education. To understand the scope of ICT enabled services, nine higher educational institutions from the region were surveyed.

The broad findings indicate that there is very wide appreciation of the internet as a tool of empowerment. There are clear guidelines in place exhorting academic institutes to use the internet widely, both for academic and administrative purposes.

The perception is that the internet can be used as a tool of association by academic institutes to reach across to students, parents and guardians. Attendance, mark sheets and examination results can be shared across. Alumni databases are very useful, more especially as alumni are spread across the world and the internet becomes the easiest and fastest way of contacting them.

That the internet can be used as a tool for securing ICT enabled services is viewed cautiously. While not discounting on the utility of web based services, it is widely felt that open and unbridled access of these services to students may lead to their indiscriminate use.

Survey of Non-Govermental Organizations

As NGOs contribute to socio economic development in a significant manner, NGO leaders (10) from the region were surveyed.

As regards internet as a tool for communication, the broad findings hint that while internet is utilized for communication in a moderate way, delivery of personalized services through internet is not a preferred route as yet.

In the case of NGOs having global operations, internet is seen as a useful tool of association. Besides, NGOs dealing with physically challenged individuals or those located in far flung locations, find the internet a very invaluable tool.

NGOs do favor use of internet as a tool for securing ICT enabled services, but are yet to make extensive use of such services.

5. Summary of Research Findings

While interpreting the findings, it is pertinent to note that the qualitative research methodology used is constructivist in nature and is typified by evolving designs and emergent understandings.

The following factors have emerged as major drivers for enhancing ICT enabled social capital:

a. Enhanced security of computer installations and augmentation of information relating to computer protection and data security.

b. Augmentation of services related to e-signature verification and e-notarization to facilitate widespread use of internet.

c. Training on the use of internet and ICT enabled services.

d. Finally, broadband is becoming commonplace (not as widespread at the time of the survey). As a result, it is affecting both speed of communication and data transfer.

The research has been able to underscore that social capital is a powerful asset. It has been further established that individuals as well as organizations draw immense benefits from social capital. This apart, social capital, in general, benefits the society at large. However, it should be realized that mere availability of ICT as a technology would not be adequate to enhance social capital. The true benefits of the technology through the means of communication, association as well as e-enabled services should be made clear to individuals and organizations in order to bring about more widespread utilization of the technology, leading to enhancement of social capital. This can be seen to be relating more to management of change, which inevitably accompanies any technology change.

Besides, the survey indicates that social capital does promote better utilization of other forms of capital such as finance and human capital. This can be construed as management of continuity, as finance and human resource are examples of those entities that are of ubiquitous nature requiring constant attention and focus.

Finally, the survey and findings in respect of inter organizational linkages have led to an understanding of how ICT technologies can be dealt with to enhance social capital.

Major Limitations

The major limitations that may be mentioned are that the research study is a regional one and that the sample size is small. Also, the period of the survey has a bearing on the data and the findings. The pace of change in ICT has been very rapid during the last couple of years, particularly in respect of use of mobile phones as well as internet. However, the findings can be largely applied to other regions and the broad suggestions that have emerged are relevant even as of date.

References

- Baker, W. (1990), "Market Networks and Corporate *B*ehavior", *American Journal of Sociology,* 96; 589-625.
- Bhat, Jyoti S. A. (2005), "Concerns of New Technology Based Industries - The Case of Nanotechnology", *Technovation*, Elsevier, May 2005.
- Bourdieu, P. & Wacquant, L. J. D. (1992), *"An Invitation to Reflexive Sociology"*, Chicago, IL:Univ of Chicago Press.
- Burt, R. S. (1998), "The Gender of Social Capital", *Rationality and Society,* 10(1): 5-46.
- Coleman, J. S. (1988), "Social Capital in the Creation of Human Capital", *American Journal Of Sociology,* 94: S95-S120.
- http://dsir.gov.in
- Hanifan, L. J. (1916), "The Rural School Community Center", *Annals of the American Academy of Political and Social Sciences*, 67: 130-138.
- Kumar, V. & Jain, P.K. (2003), *"Commercialization of New Technologies in India: An Empirical Study of Perceptions of Technology Institutions",* Technovation, Elsevier, 23(2), 113-120(8), February 2003.
- Loury, G. C. (1977), "A Dynamic Theory of Racial Income Differences", In Woman, Minorities

and Employment Discrimination, P A Wallace and A Lemund (Eds), Lexington, MA: Lexington Books.

- Loury, G. C. (1987), "Why should we care about Group Inequality?"*, Social Philosophy and Policy,* 5:249-271.
- Meyerson, E. (1994), "Human Capital, Social Capital and Compensation: the Relative Contribution of Social Contacts to Managers' Incomes", *Scandinavian Sociological Association*, 393-399.
- Nahapiet, J. & Ghoshal, S. (1998), "Social Capital, Intellectual Capital and the Organizational Advantage", *Academy of Management Review*, 23(2): 242-266.
- Putnam, R. (1993), "The Prosperous Community: Social Capital and Public Life", *The American Prospect,* 13: 35-42.
- Salazar, R. & Dornbusch, S. (1995), "Social Capital and the Reproduction of Inequality: Information Networks among Mexican-origin High School Students", *Sociology of Education,* 68:116-135.
- Sushil (2005), "A Flexible Strategy Framework for Managing Continuity and Change" *International Journal of Global Business and Competitiveness,* ISSN 0973-4619, 1(1), December 2005, 22-32.