ABSTRACT

Information is, and has always been a vital component of every activity. It is the uninterrupted flow of this vital resource, which keeps alive the entire society as we know today. Although it is omnipresent, the fact that it is unseen and intangible makes it difficult to recognize or define. The term information is used both as an object and a process, and can exist in different forms. Information is resource in itself and as a resource is pervasive and different from other resources in fundamental ways, in kind not merely in degree. Attempts have also been made to assess the benefits resulting from the use of information. Similarly Consensus regarding the concept of development is hard to achieve. Till decades it was equivalent to economic progress only, but with changing times it was realized that development is something more than mere production of commodities and services hence the concept of development was widened to include human development and it was also admitted that the capacity for development is enhanced through the simultaneous cultivation of material and nonmaterial resources.

Human survival and development and hence world’s economy and development, over the centuries, in a broad sense, have evolved around two principal axes, namely the energy axis and the information communication axis. The connection between the developments along the two axes has become obvious in the recent past. The discoveries, inventions and innovations in one domain have accelerated the discoveries, inventions, and progress in the other domain, like a synergistic effect. Therefore, economists, sociologists, and futurologist have been studying the impact of information technology (IT) on society, and trends in national economies centred on access to and use of organised information. These two factors – energy availability and use and information availability and use – are now included among the indicators of socio-economic development of nations.

Availability and use of information plays an important role in development process. However it is pointless to ask whether information “causes” development or, conversely, development “causes” information. Information and knowledge have conventionally supported and underpinned all developments be they social, economic, scientific or technical. They were, in a sense, part of the “intellectual infrastructure”
of society. Technological changes particularly developments in the Information and Communication Technology (ICT) together with structural changes in the economy resulted in what was termed as the ‘Information Society’. Technological change has been the major contributor to the process of development. In recent years, rapid development of ICT has vastly increased human capacity to process information and has undoubtedly accelerated growth in the information-intensive tertiary sector. Economies now reason that information and communication technologies have triggered a new long wave of economic growth stimulating the development of information societies.

Once an organism is born or a phenomenon uncovered, there is an almost irresistible urge to measure its growth. This is inevitable for several reasons. When society devotes considerable amount of its resources to any particular activity, economists will want to look into this allocation and get an idea of the magnitude of the activity, its major breakdown, its relation to other activities. It is truly argued that “if it can not be measured it does not exist.” ‘Development’ and ‘Information’ do exist, hence should be measured. However the two concepts have proved to be nebulous and difficult to define and the challenges of measuring them are even greater. Since 1990 attempts to measure human development have been made using various indicators and a human development index have been constructed, but information has been even more difficult to measure.

Measuring the relationship between development and information has been even a greater challenge. Economists, development scientists and information scientists have been struggling for decades to identify criteria for the assessment and measurement of the impact of information on development. Since information has proved to be impossible to measure from the social perspective the focus is currently on measuring information technology rather than on measuring information itself. There have been attempts to assess and measure the role of information and ICT in the development process. The World Information Report and the World Communication Report are noteworthy as state-of-art documents which assessed the global scenario.

Three indexes namely, the Human Development Index and Technology Achievement Index by UNDP of 2001 and the Knowledge Index by the World Bank of 2008, shows
that there is a fair amount of similarity between them. The similar trends are very clearly visible and statistically too, the parallel trends are clearly indicated by the strong positive correlation values between the three. It is against this context of information and development that the present study “Information Index: An Analytical Study of the Theoretical and Empirical Issues” was undertaken. Extensive readings on the issues were undertaken before beginning the study and were continued throughout its duration.

The objectives, methodology, operationalisation of the entire research, the rationale, the scope of the study, data collection method, statistical techniques used and the index generation procedure are explained. More specifically the objectives of the present study are to: Review the attempts made to measure Information infrastructure and related concepts like e-Readiness, Information Society etc., Identify the indicators used in various attempts, Select appropriate indicators for an Information Index in the Indian context, Develop a methodology for construction of an Information Index to measure information infrastructure of a society, Construct an Information Index for various Indian States, and Compare the constructed Information Index with National Human Development Index to observe the relationship between the two. The present study seeks to examine various attempts at index constructions, select appropriate indicators of information, gather secondary data on them and decide a suitable methodology for compiling a composite index based on the data.

The concept of indexes and the various methods used to construct them are discussed; various attempts at the global and national level to measure development, information and other related concepts are also described in detail. There after the developed methodology of Information Index was applied to 15 states of India to find out the values and ranks obtained by them. The creation, communication and use of information with appropriate technical support and a facilitating socio economic environment are considered to be critical factors in the development of a region. These factors together are termed as information infrastructure in the present study and are used to study the position of 15 major Indian states. In order to do so a wide range of secondary dataset was collected for the selected indicators of information infrastructure from authentic government statistical publications.
Keeping in mind the restricted availability of relevant data, a separate Basic Sub Index of 12 indicators of information generation (4 indicators), communication (5 indicators), and use (3 indicators) was compiled. While many of the traditional information infrastructure of a print-based society were covered, several of the modern indicators of information had not been included. To create an Information Index which balanced both traditional and modern information infrastructure, the e-Readiness Index (ERI) scores were used as the second sub-index. This index is a product of the e-Readiness Assessment report 2006 for the Indian states.

The Basic Index and ERI together covered a majority of relevant shortlisted indicators of information infrastructure and the technical support needed for it. Some of the political issues had also been included. However, the indicators representing socio-economic environment were not sufficiently covered. To meet this gap, it was decided to use the National Human Development Index (NHDI) which is recognized as a measure of the development of a region. Since the NHDI 2001 had been constructed for only 15 states, it further compelled the present study to limit itself only to these 15 states.

The use of NHDI and ERI values meant that the number of indicators to be processed was significantly reduced. The data of the indicators of the Basic Index was collected from various government and semi-government sources. These data was unitized generally based on the population figures, so as to make them comparable. After deriving comparable values per unit, the theoretical issue of how to further process this data had to be resolved. Two theoretical techniques were considered, the goalposts as used by HDI and the normalization method used by KI. The normalization method was chosen for the present study since the use of goalposts could be considered more subjective.

The indicators of the Basic Index reflected the three core facets of information generation, communication, and use. It was decided to group the 12 indicators into three sub-indexes. These three sub-indexes were then combined with equal weightage to form a Basic Sub index. It was argued that since the Basic Sub Index reflected the traditional information infrastructure, while the ERI represented the electronic information infrastructure, both these sub-indexes should have equal weightage. The
NHDI covered socio economic environmental factors which are not as central to the information infrastructure, as the indicators in the other two indexes; hence it was decided to give it a weightage of 0.5. With this weightage to each of the three components, the Information Index was compiled.

The Information Index when applied to the 15 major Indian states showed that the level of information infrastructure varied considerably across the states. Karnataka was placed at the first position, while Bihar ranked last, and Gujarat was ranked at mid position of 8. In terms of scores West Bengal is at the mid point. This means that nine out of the fifteen states were above the median point. It must be acknowledged that each of the three component sub indexes influenced the scores and ranks of the final Information Index.

Policy makers, Governments, NGOs and corporates who are concerned with giving an impetus to the development process will find an Information Index useful in different ways. The overall index values of different states and regions provide a comparison which will help the stakeholders to access their own position vis-à-vis the other regions. Further in implementing development policies the index suggests the kind of data to be collected to help monitor the progress. It is suggested that similar Information Indexes be constructed on a regular basis following the methodology suggested in the study.