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Contents

- 1. A critical analysis on the consumer protection in medical negligence in India: a contemplative study**
Anita A Patil 1 - 18
- 2. Social Media And Child Mental Health Issues**
Dintomon P D 19 - 33
- 3. Role of knowledge management in the transformation of India into a knowledge economy**
Chacko Jose P & Bindu Balagopal 34 - 45
- 4. Level of awareness and stigma among social work trainees about HIV infected and affected community -a descriptive study.**
Nithin Kumar N & Athena Rose Joseph 47- 56
- 5. Dialoguing environmental peace through people's movements – a reading on anti-dam movement in chalakkudi river basin, kerala western ghats**
K. Umadevi 57 – 70
- 6. Social work and community engagement: perspectives from practice, research and education, with special reference to community engagement in ullal, Karnataka.**
Eveleen Benis & Sushmitha 71- 84
- 7. Social sense of place and placelessness in Amitav Ghosh's**
Elizabeth Maria 85- 90

ROLE OF KNOWLEDGE MANAGEMENT IN THE TRANSFORMATION OF INDIA INTO A KNOWLEDGE ECONOMY

Chacko Jose P & Bindu Balagopal*

Introduction

A knowledge economy is one in which knowledge is the key resource, just like in an agricultural economy land is the key resource. The knowledge economy is a vague term that refers either to an economy of knowledge focused on the production and management of knowledge, or knowledge-based economy. In the second meaning, more frequently used, it refers to the use of knowledge to produce economic benefits.

The knowledge economy differs from the traditional economy in several key respects. Firstly, the knowledge economy is not of scarcity, but rather of abundance. Unlike most resources that deplete when used, information and knowledge can be shared, and actually grow through application. Secondly the effect of location is diminished in a knowledge economy. Using appropriate technology and methods, virtual marketplaces and virtual organizations can be created that offer benefits of speed and agility, of round the clock operation and of global reach. Thirdly in a knowledge economy laws, barriers and taxes are difficult to apply on solely a national basis. Knowledge and information 'leak' to where demand is highest and the barriers are lowest. Fourthly, in a knowledge economy knowledge

* Chacko Jose P- Associate Professor of Economics, Sacred Heart College, Chalakudy, Kerala

BinduBalagopal - Head of the Department of Economics, Victoria College, Palakkad, Kerala

enhanced products or services can command price premiums over comparable products with low embedded knowledge or knowledge intensity. Fifthly in a knowledge economy pricing and value depends heavily on context. Thus the same information or knowledge can have vastly different value to different people at different times. Human capital - competencies - are a key component of value in a knowledge-based company, yet few companies report competency levels in annual reports. In contrast, downsizing is often seen as a positive 'cost cutting' measure.

Knowledge Assessment Methodology

The World Bank's Knowledge Assessment Methodology (KAM: www.worldbank.org/kam) is an online interactive tool that produces the Knowledge Economy Index (KEI)—an aggregate index representing a country's or region's overall preparedness to compete in the Knowledge Economy (KE). The KEI is based on a simple average of four sub-indexes, which represent the four pillars of the knowledge economy:

- Economic Incentive and Institutional Regime (EIR)
- Education and Training
- Information and Communications Technologies (ICT) Infrastructure
- Innovation and Technological Adoption

A Knowledge Economy is one that utilises knowledge to develop and sustain long-term economic growth, thus the Knowledge Economy framework focuses on four pillars which are needed to support a successful knowledge economy.

1) The first pillar of the framework is Economic Incentive and Institutional Regime (EIR) that is conducive to the creation, diffusion, and utilisation of knowledge. A regime that provides incentives that encourage the use and

allocation of existing and new knowledge efficiently will help to foster policy change. The economic environment must have good policies and be favourable to market transactions, such as being open to free trade and foreign direct investment. The government should protect property rights to encourage entrepreneurship and knowledge investment.

2) The second pillar is a well-educated and skilled population that creates, shares, and uses knowledge efficiently. Education, especially in the scientific and engineering fields, is necessary to achieve technological growth. A more educated society tends to be more technologically sophisticated, generating higher demand for knowledge.

3) The third pillar is a dynamic information infrastructure that facilitates the communication, dissemination, and processing of information and technology. The increased flow of information and knowledge worldwide reduces transactions costs, leading to greater communication, productivity and output.

4) The final pillar is an efficient innovation system of firms, research centres, universities, think tanks, consultants, and other organisations that applies and adapts global knowledge to local needs to create new technology. The generation of technical knowledge leads to productivity growth. With these pillars in place, countries can develop a knowledge economy and sustain long-term economic growth.

Knowledge Economy Index (KEI)

The Knowledge Economy Index (KEI) 2012 rankings for 146 countries are prepared by World Bank. Sweden retains its first-place position as the world's most advanced knowledge economy, with a 2012 KEI of 9.43. Sweden is especially strong in innovation and ICT, ranking second for both

pillars. In the education pillar, however, it fell to 6th place from 3rd place in 2000. Sweden's competitiveness in the ICT pillar is largely attributable to an increase in Internet users. Sweden is also remarkably strong in all the innovation indicators: royalty payments and receipts, science and engineering (S&E) journal articles, and patents. The slight decline in its education performance is mainly due to a drop in secondary and tertiary enrolment rates. The gross secondary enrolment rate declined from 152 percent in 2000 to 103 percent most recently. The tertiary enrolment rate has risen over time, but not as fast as other countries, so its normalized score declined from 9.72 in 2000 to 8.72 in the most recent year. The United States KEI position has suffered from a weakening in all 4 pillar indices. Its KEI has fallen from 1st place in 1995 to 4th in 2000 to 12th position in the current 2012 rankings.

Table 1: KAM 2012 Knowledge Indexes Top 10 Economies

COUNTRY	KEI (Knowledge Economy Index)		EIR (Economic Incentive Regime)		Innovation		Education		ICT	
	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index
Sweden	1	9.43	4	9.58	2	9.74	6	8.92	2	9.49
Finland	2	9.33	2	9.65	3	9.66	11	8.77	6	9.22
Denmark	3	9.11	3	9.63	5	9.49	15	8.63	13	8.88
Netherlands	4	9.11	19	8.79	7	9.46	12	8.75	5	9.45
Norway	5	8.97	8	9.47	17	9.46	3	9.43	17	8.53
New Zealand	6	8.97	14	9.09	22	9.01	1	9.81	23	8.3
Canada	7	8.92	7	9.52	10	8.66	16	8.61	24	8.23
Germany	8	8.9	13	9.1	12	9.32	23	8.2	8	9.17
Australia	9	8.88	23	8.56	19	9.11	2	9.71	22	8.32
Switzerland	10	8.87	6	9.54	1	8.92	41	6.9	7	9.2

Source: KAM 2012 World Bank

The Nordic countries remain among the best KEI performers. Finland is ranked 2nd, with Denmark and Norway following closely in the 3rd and 5th places, respectively. All four KE pillars in these countries are well developed and balanced. These countries are characterized by their particularly strong performance in the EIR pillar: all rank in the top 10; and to a lesser extent in the education pillar where they all rank within the top 15. Compared to 2000, Finland jumped 6 positions to 2nd place in 2012 (KEI 9.33) because of improvements in the EIR, education, and ICT pillars. Its strongest performance was in innovation and EIR, for which it

ranks in the top 3. Denmark made impressive improvement in the EIR pillar, rising 8 positions to 3rd place between 2000 and 2012. However, its ICT pillar ranking dropped 10 places to 13th, because of a relatively weak showing in telephone and computer penetration.

Table 2: KAM 2012 Knowledge Indexes of BRIC countries

Source: KAM 2012 World Bank

Country / Economy	KEI Knowledge Economy Index		EIR Economic Incentive Regime		Innovation		Education		ICT	
	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index
Brazil	60	5.58	82	4.17	51	6.31	61	5.61	58	6.24
Russia	55	5.78	117	2.23	40	6.93	44	6.79	44	7.16
India	110	3.06	99	3.57	76	4.5	111	2.26	122	1.9
China	84	4.37	97	3.79	54	5.99	95	3.93	94	3.79

India ranks 110 among 146 countries in KEI index. Our position in the ranking has fallen from 104th in 2000 to 110th in 2012. India's KEI index is 3.06 when compared to Sweden's 9.43. There are only very few countries behind India, in the ranking like, Pakistan (117), Bangladesh (137), Nepal (135) and some African countries. What's interesting is that among various factors such as economic incentive regime, innovation, education, and information and communications technology (ICT), India's highest ranking is in the area of innovation. But even though India is known for IT outsourcing, its own use of ICT is far behind that of developed economies. Apart from fixing weak primary education, restrictive policies on labour and the general difficulty of doing business in India, a lot more needs to be done by the government to facilitate the transition to a knowledge-based economy.

Countries in the Asia-Pacific region are far less knowledge driven than developed nations, according to a recent report by the Asian Development Bank (ADB). Using an index developed by the World Bank, the report shows that average Knowledge Economy Index score for the Asia-Pacific region was 4.39, compared with 8.25 in the case of OECD (Organisation for Economic Co-operation and Development) countries.

Theoretical perspectives

Let us now examine the factors that determine a country's rate of economic growth in the long run. The growth models of the 1960s assigned a significant role to human capital formation and in particular to education financed by the public sector (Arndt, 1987), but long-run growth was entirely an exogenous process due to technological progress, which was assumed as an unexplained time trend in labour productivity. In recent years, this approach has received renewed attention with the rise of a new line of research that explains the growth rate endogenously, assigning an important role to the private and public sectors in the formation of human capital, at both the aggregate and the individual levels. Within the new growth theory, economists have begun to study the influence of education spending on consumption-saving decisions in models which allow for the possibility of persistent growth (Glomm and Ravikumar, 1997). These recent developments have significant policy implications since public or private expenditures on education may influence long-run growth and social welfare. To the extent that formal schooling is a significant component of human capital investment, the institutions for schooling may be important for economic growth (Gradstein, Justman and Meyer 2005).

Public expenditure on education and returns to growth- the revival of interest in growth theory and analysis in the 1980s was marked by a

paradigm shift towards a new outlook: endogenising the growth factors within the system. The endogenous growth perspective looks at growth. In the neoclassical growth model, the economy is 'assumed' to reach a steady state in which all macroeconomic variables grow at the same rate and in the absence of technological progress, per capita growth of these variables will eventually cease.

Endogenous growth theory states that human capital accumulation is a driver of economic growth. The belief, that education causes growth has led governments of many developing countries to make huge investments in the education sector. Paul Romer in 1986 published a paper called 'increasing returns and long run growth' in which he proposes a model in which economic growth is driven by the accumulation of knowledge. Endogenous growth theory focuses on education, job training and development of new technologies for the world market. The assumption of diminishing returns to capital is abandoned in the endogenous growth theory. According to the traditional view, K includes only the economy's stock of plants and equipment then it is natural to assume diminishing returns. The advocates of endogenous growth theory argue that the assumption of constant returns to scale is more applicable if K is interpreted to include knowledge a part of capital. Knowledge is used in the production of goods and services and knowledge is used to produce new knowledge. Compared to other forms of capital, knowledge does not exhibit diminishing returns. The increasing face of scientific and technological innovation over the past centuries has led economists to argue that there are increasing returns to knowledge. If we assume that knowledge is a type of capital, then endogenous growth model with the

assumption of constant returns to scale provides an analysis of long run economic growth and sustainable development

Romer takes the example of an economy with two sectors: the manufacturing firm and the research universities. Manufacturing Firms produce goods and services which are used for consumption and investment. Universities produce a factor of production called knowledge, which is freely used in both sectors. The stock of knowledge determines the efficiency of labour in both manufacturing sector and universities. The growth of knowledge depends on the fraction of labour force in universities. The economy exhibits constant returns to scale as long as capital is broadly defined to include knowledge. If we double both physical capital K , and knowledge E , then we double the output of both sectors in the economy. Here persistent growth arises endogenously because the creation of knowledge in universities never slows down.

Social Perspectives

Apart from technical knowledge, and skills becoming factor inputs in production, there are many spill over benefits to the society at large, what we call as positive externalities. Knowledge enrichment enables human beings to have a better quality of life in the sense that they are better equipped to appreciate and acquire culture in the widest sense of the term. Human beings have the right to be open to great paintings, great music, theatre, poetry and the arts. Their life will be richer, their appreciation of values keener and their awareness sharper, with education. Society moves forward with all the cultural and counter cultural trends generated in the process.

Creating an awareness regarding the dangers of losing environmental quality is one of the pressing needs in India. Environment as an amenity, a luxury and a necessity should be appreciated. Environment degeneration, in the interests of economic growth will soon lead to the stark reality that the economic growth is not sustainable. A high quality social infrastructure can be assured only with environmental protection. To realize this creation of a population with strong knowledge base and social awareness is a prerequisite.

Conclusion

Though we can boast of a glorious past, the fact remains that the achievements of contemporary Indian universities are limited. The quality of higher education as judged by the list of 200 top ranking universities prepared by the Times Higher Educational Supplement in October 2011 shows that India is nowhere near the picture. In fact the top five leading institutions of higher education are all in America followed by Britain. There are none from Asia in the top 20. There is not a single university in India in this list of the top 200 in the world. (Sen 2013). Singapore is small and lacks a natural resource base, but have universities which are ranked among the World's best. It is almost a corollary that Singapore is also hailed as the best country to work in, the least corrupt with high environmental standards.

The present scenario for knowledge creation in India is bleak. There is severe quality deterioration, lack of innovation and creativity. The unholy nexus between political parties and private educational agencies has made education the best investment opportunity with high return and low risk. The government instead of ensuring the principles of inclusion, equity and access, left the students to the mercy of banks for finding funds for

financing higher education in the private sector. Such policies certainly cannot lead to the formation of an egalitarian society.

The neglect that Indian planners have shown towards knowledge creation is incomprehensible even in the context of the desire to provide universal literacy and free elementary education to children below fourteen. The level of literacy still remains high. Vast resources which should fruitfully move towards education, both higher and elementary is expended in wasteful and unproductive activities. India is slated to have one of the youngest populations, with the bulk of the population figuring in the working age. However, in order to utilize this demographic dividend effectively, India needs to impart adequate and appropriate skills to its workforce.

India needs a shift in focus. Our priorities have to be changed and our form shifted from big dams and steel mills to knowledge creation and the generation of creative knowledge. The emphasis should be on people with ideas and capabilities. Giving livelihood jobs to millions are important, but more important become the chance to grab the opportunity of turning them into a qualified human resource.

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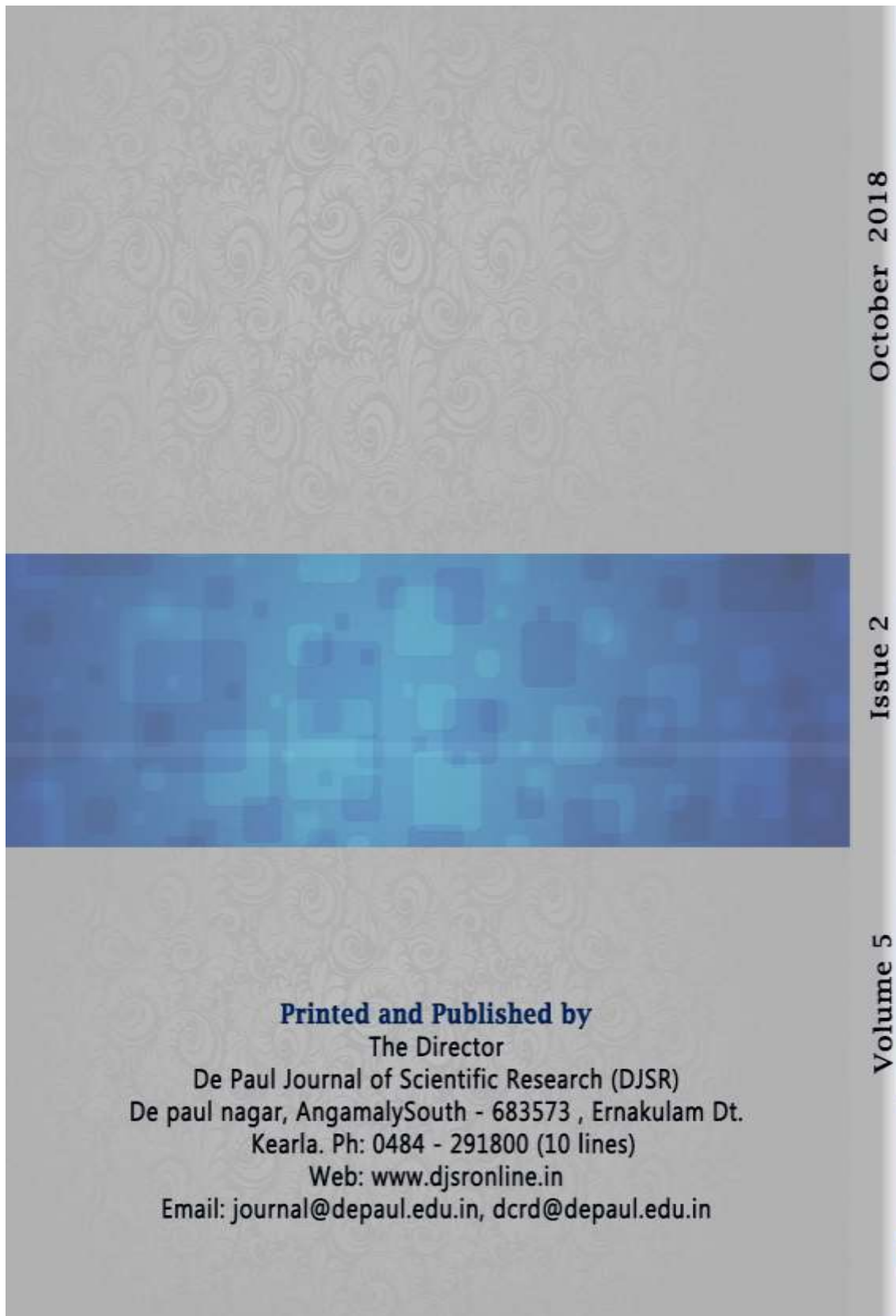
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