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Perspectives of the knowledge-based economy on the educational sector: spotlight on Pakistan

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Technological developments in the twentieth century have transformed the majority of wealth-creating work from physically-based to 'knowledge-based'. Therefore technology and knowledge are the key factors of production. With increased mobility of information and the global work force, knowledge and expertise can be transported instantaneously around the world, and any advantage gained by one organization can be eliminated by competitive improvements overnight by another organization. The objective of the study is to evaluate educational status of different countries including Pakistan i.e., net primary enrolment, gross secondary enrolment, net tertiary enrolment etc. through different national and international reports between the years 2008 and 2010. The result shows that particularly, Pakistan's education sector performance is not very encouraging. The low enrolment rates at the primary level, wide disparities between regions and gender, lack of trained teachers, deficiency of proper teaching materials and poor physical infrastructure of schools indicate the poor performance of this sector. Education is the most important mode to stand firm in the competitive world of global economy which is by and large based on knowledge.

1. Introduction

According to Sir Francis Bacon's adage, 'knowledge is power' is now being replaced by 'sharing knowledge is power'; with knowledge or education one's potential or abilities in life would certainly increase. Having and sharing knowledge is widely recognized as the basis for improving one's reputation and influence, thus power. Sharing knowledge runs counter to what we have traditionally been taught. Throughout our formal education, we are assessed on individualized learning and what 'I' know versus what 'we' know which demonstrates 'knowledge is power' attitude. Perhaps to promote knowledge-sharing culture one can define cheating as the failure to help someone in time of need. Thus, if we don't share our knowledge and experience when needed, then we may be guilty of cheating (King 2009). In the competitive world the use of knowledge in the production processes and service industry acts an important indicator to determine the growth of overall GDP of a country (Brinkley 2006). Our ability to compete or survive in the globalization of economic systems depends on our commitment to developing our human capital and ensuring a continuous learning process within the government institutions and enterprises to create a culture of innovation (Mikulecký and Lodhi 2009).

The economic performance of countries depends upon the quality of their educational system and human capital. Human capital is the most efficient production factor,

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expressed through the knowledge, competences, creative abilities and moral traits of the members of the society (Sireteanu and Bedrule-Grigoruta 2007). Two important factors which really become the base for the existence of knowledge economy are industrial and scientific revolutions. The industrial revolution caused transformation of the economy from agriculture to industry, resulting in improved living standards; similarly the scientific revolution had its economic and cultural effects, which provided the base for knowledge base economies. These economies consider knowledge as the most important factor for a competitive environment, for the countries competing against countries or firms against firms (Kalim and Lodhi 2002). Knowledge economies based on the production, distribution, and use of knowledge as the main driver of growth, wealth creation, and employment across all industries. The transformation from an industrial society to a knowledge society and a global knowledge economy is characterized by the increased importance of knowledge, both technical knowledge (know-how), and knowledge about attributes (information and awareness). The knowledge economy is emerging from two defining forces, the rise in knowledge intensity of economic activities, and the increasing globalization of economic affairs (Houghton and Sheehan 2000).

Pakistan is a labour-intensive country and it is confronted with a high population rate, low literacy level, and poor skill and technological base; it has resulted in critical imbalances in the development of human recourse (EUROPA 2007). The study explains the importance of knowledge economy for overall development of Pakistan. There are so many other problems, like terrorism, corruption, democratic instability, economic instability etc., but lack of quantity and quality education is most serious (Anwar and Aman 2010).

Pakistan's economy encompasses textiles, chemicals, food processing, agriculture and other industries. In term of purchasing power, Pakistan is the 27th largest economy in the world while in absolute dollar terms it is the 46th largest economy of the world. According to the Travel Document System (TDS, 2009–2010) the World Bank considers Pakistan a low-income country. The report confirms that not more than 49.9% of adults are literate, and life expectancy is about 65 years. The population, currently about 180 million, is growing at 1.81% annually. In 2000, the government made significant macroeconomic reforms i.e., privatizing Pakistan's state-subsidized utilities, reforming the banking sector, instituting world-class anti-money laundering law, cracking down on piracy of intellectual property, and moving to quickly resolve investor disputes. TDS (2009–2010) explains September 11 2001, and Pakistan's proclaimed commitment to fighting terror; many international sanctions, particularly those imposed by the United States, were lifted. Pakistan's economic prospects began to increase significantly due to unprecedented inflows of foreign assistance at the end of 2001. This trend is expected to continue through 2009. On 8 October 2005 a magnitude 7.6 earthquake struck Pakistan, India, and Afghanistan. The epicentre of the earthquake was near Muzaffarabad, the capital of Pakistani-administered Kashmir, and approximately 60 miles north-northeast of Islamabad. An estimated 75,000 people were killed and 2.5 million people were left homeless. The earthquake cost Pakistan $1.1 billion in resettling those affected. Ishrat (2005) stated that Pakistan was one of the few developing countries that had achieved an average growth rate of over 5% over a four-decade period ending 1988/1989. Consequently, the incidence of poverty had declined from 40% to 18% by the end of the 1980s. According to Ishrat (2005) the salient features of economic history Pakistan are:

- Pakistan is self sufficient in most food production.
- Per capita incomes have expanded more than sixfold in US dollar terms.
- Pakistan has emerged as one of the leading and successful producers of cotton and cotton textile.

- Pakistan has developed a highly diversified base of manufacture products for domestic and world markets.
- Physical infrastructure network has expanded with a vast network of gas, power, roads and highways, ports and telecommunication facilities.

These achievements in income, consumption, agriculture and industrial production are extremely impressive and have lifted millions of people out of poverty levels. But these do pale into insignificance when looked at against the missed opportunities. The largest setback to the country has been the neglect of human development. If the adult literacy rate had been close to 100 instead of close to 50 today, the per capita income would have reached at least US$1200 instead of US$640 (Ishrat 2005).

The study divides into the following sections: after the introduction which is presented in Section 1 above, Section 2 shows the literature review. Discussions are shown in Section 3. A final section concludes the study.

2. Literature review

Knowledge as a resource causes great confusion for economists, as it is the only source which increases with use rather than diminishing. Knowledge may be expensive to generate but there is little cost to diffusion. Unlike physical goods that are consumed as they are used, providing decreasing returns over time, knowledge provides increasing returns as it is used. The more it is used, the more the individual operating with the knowledge economy can utilize the value of knowledge by accruing knowledge for business needs (enterprise), or the more valuable it becomes, creating a self-reinforcing cycle obtaining knowledge through education and work experience for improved employment prospects (Zack 1999). Knowledge is different from physical products: for example it can be in more than one place at one time, selling it does not diminish the supply, buyers only purchase it once, and once sold, it cannot be recalled. Another aspect of knowledge as a most valuable recourse is because the marginal cost of manipulating, storing and transmitting information is virtually zero. The application of knowledge to all aspects of the economy is being greatly facilitated, and the knowledge intensity of economic activities greatly increased. This increasing knowledge intensity involves both the increasing knowledge intensity of individual goods and services, and the growing importance of those goods and services in the economy (Houghton and Sheehan 2000).

ESCWA (2003) defines knowledge as ‘acquaintance with facts, truths, and principles, as from study or investigation’. Many different definitions exist but the majority treats knowledge as a state of mind relative to a particular domain of information. Information if it leads to action can be defined as knowledge. In mathematical terms, knowledge can be defined as follows: $K = \{I + T\} \wedge S$ where K stands for knowledge, I for information, T for technology and S for sharing. The above equation shows that when valid information is processed with suitable technology, the net outcome can be increased exponentially by sharing with it relevant people results the knowledge or one state that knowledge is an information when combined with technology that dramatically increases its impact when shared.

The IT revolution has intensified the move towards knowledge codification, and increased the share of codified knowledge in the knowledge stock of advanced economies. All knowledge that can be codified and reduced to information can now be transmitted around the world at relatively little cost; as a result knowledge is acquiring the properties of a commodity. The current economies are not just only about obtaining as much knowledge as possible but quality knowledge (OECD 1996).

2.1 Knowledge economy

For the last two hundred years, neo-classical economics has recognized only two factors of production: labour and capital. But now information and knowledge are most important factors for primary wealth-creating assets. The knowledge economy places great importance on the diffusion and use of information and knowledge as well as its creation. The determinants of the success of enterprises and national economies as a whole rely upon their effectiveness in gathering and utilizing knowledge. The term knowledge economy results from recognition of the role of knowledge and technology in economic growth. Knowledge, as embodied in human beings and in technology, has always been central to economic development. The convergent and mutually reinforcing impacts of globalization and the information and communication technologies (ICT) revolution have radically changed not only the methods and structures of production, but also the relative importance of factors of production along with the profile of the workforce (Kefela 2010).

According to Shahvali (2011, p. 194):

> There is no doubt that indigenous knowledge (IK) is essential for the eradication of poverty, as well as the localization of development. However, to be hopeful we should enrich the quality of indigenous knowledge with some theories and methods to empower local individuals and communities by answering three questions: (1) How can one access a knowledge society in the local communities? (2) How can one make linkages between indigenous and scientific knowledge to have a better synergy/integration? (3) How can one evaluate the customary rules and practices that govern IK to revitalize IK transmission from past to present generation and then, on to the future generations?

Knowledge economy has always been part of our lives; the difference now is that IT is allowing us to accumulate and analyse this knowledge like never before. Knowledge embodied in new products and services has become the primary source of wealth creation for the reason that it adds value to both products and services. Digital networks provide access to vast amounts of data and information, but knowledge management is required to translate data and information in a meaningful way (Clarke 2001). The knowledge economy encompasses all jobs, companies, and industries in which the knowledge and capabilities of people, rather than the capabilities of machines or technologies, determines comparative advantage. The Internet is used as an example of how an IT infrastructure can enable or constrain knowledge economy and knowledge management processes in developing countries. Today global wealth is concentrated less and less in factories, lands, tools and machinery (WB 2000). A knowledge-based economy relies primarily on the use of ideas rather than physical abilities and on the application of technology rather than the transformation of raw materials or the exploitation of cheap labour. In an agricultural economy land is the key resource while in industrial economy natural resources, such as coal and iron ore and labour are the main resources. A knowledge economy is one in which knowledge is the key resource (Muntean *et al*. 2009).

2.2 Functioning of knowledge economy

Muntean *et al*. (2009) stated that in the twenty-first century, comparative advantage will become much less a function of natural resource endowments and capital-labour ratios and much more a function of technology and skills. Knowledge economy is about adding ideas to products and turning new ideas into new products and moreover the knowledge economy is also introducing new areas of competition among economic sectors. Rivalry is not

limited to product functionality but can focus, as well, on the basic nature of the solution being offered. Numerous researchers, consultants, and authors have attempted to capture the key factors that distinguish the knowledge economy. According to Lengnick-Hall and Lengnick-Hall (2003) some characteristics of the knowledge economy are as follows:

- The knowledge economy uses technology to create symbolic goods. Electronic symbols represent information that we need to know about physical goods to conduct business, such as banking transaction
- The knowledge economy places comparatively little reliance on the need for physical concentration or massing of labour materials, and money. Previously, it was necessary to co-locate these resources in order to produce goods and services.
- Knowledge economy has no definite boundaries. Knowledge transcends firm, industry, and even national borders. Needed knowledge resides in no single place. Organizations have both time and space independence, so work can be performed from a variety of locations.
- The knowledge economy brings together different economic sectors that in the past functioned as separate entities.
- In the knowledge economy, pricing becomes more dynamic. That is, pricing decisions change based on time and place, since products and services are constantly updated and shifted.

It is noticeable that knowledge work and knowledge worker is also involved in knowledge economy or society. Knowledge work can be defined as that which requires mental rather than physical power. In a broader sense, it refers to the analysis of information and use of expertise in other to solve problems and generate or disseminate ideas (Ogunsola 2008). Ngwenya and Hagmann (2011) present a different dimension of the innovation systems approach, based on 20 years' experience with innovations systems. The focus is on the role of facilitation in triggering the changes, as well as in integrating learning and knowledge management (KM) into the innovation process.

2.3 Knowledge economy prospects in Pakistan

The world is now shifting to the culture of learning economy so the ability to attain new competencies is crucial for the success of individuals and for the performance of firms, regions and countries. Qaisar (2009) stated that in the west knowledge economy does exist and burgeon. The developing countries, on the other hand, lag behind. Because of the poor literacy rate, most people in Pakistan are unable to realize that knowledge economy is crucial for promoting national economy. In 2008, there exists a global economic crunch laying its symptoms in the form of inflation in one country or another. Yet, Pakistan considers and declares itself lucky to have applied to the IMF earlier to receive a loan – though it was Pakistan's Plan C – to circumvent default, as several other countries of the world are still in the queue to knock at the door of the IMF.

Information-intensive economy, competitive advantage is based primarily on the application of knowledge, and not all of the data, intelligence and wisdom which a global company needs to compete can be found in one place. Furthermore, the cost of overcoming distances is falling rapidly for commodities that are mobile, such as capital, goods, and information. Knowledge, rather than the concrete characteristics of goods or services or the mechanics of production process, is becoming the defining characteristic of economic activities (Smith 2000). The impact of knowledge is pervasive in both the old economy as

well as the new economy. Human know-how is a crucial component in virtually everything we produce, and it determines how we produce valued goods and services. The growing codification of knowledge and its transmission through communications and computer networks has led to the emerging information society. The need for workers to acquire a range of skills and to continuously adapt these skills underlies the learning economy. The importance of knowledge and technology diffusion requires better understanding of knowledge networks and national innovation systems. Most importantly, new issues and questions are being raised regarding the implications of the knowledge-based economy for employment and the role of governments in the development and maintenance of the knowledge base. The convergent and mutually reinforcing impacts of globalization and the ICT revolution have radically changed not only the methods and structures of production, but also the relative importance of factors of production along with the profile of the workforce (Gürüz and Pak 2002).

3. Discussion

3.1 Educational standing in Pakistan

It is unfortunate that in view of the facts and figures given in the Global Competitiveness Report (2008, 2010), Pakistan's ranking is very poor both in quantity and quality of education among 132 leading countries of the world. Considering the importance of education for knowledge economy, the present study made a comparison of ten countries including Pakistan concerning Net Primary (NP), Gross Secondary (GS) and Net Tertiary (NT) education. Among these countries there are some countries neighbouring Pakistan, Muslim countries and developed countries of the world. The statistics are given in Table 1.

The statistics shows that Pakistan's Net Enrolment in Primary Education (NEPE) in 2008–2009 was 65.5% and ranked 122 which is lowest among other listed countries for comparison. India, as nearest neighbouring country, had an NEPE of 89%, while for all other countries it was above 90%, and the Islamic country Malaysia came first in NEPE and its percentage was 99.9%. Considering the gross enrolment in secondary and tertiary education, Pakistan is far behind. According to the Global Competitiveness Report (2010), Pakistan showed some improvement in all three educational states but still very low. The educational status is shown in Table 2.

Table 1. Educational statistics in the developing countries.

Country	Net enrolment in primary education	Rank (NEPE)	Gross enrolment in secondary education	Rank (GESE)	Net enrolment in tertiary education	Rank (NETE)
Pakistan	65.5	122	30.0	121	4.5	118
USA	91.5	74	63.9	48	81.8	6
Czech Rep.	92.5	69	92.2	41	49.8	38
Malaysia	99.9	1	69.1	95	28.6	71
Finland	96.8	35	111.6	9	93.2	2
India	88.7	94	54.0	104	11.8	98
Japan	99.8	2	101.2	22	57.3	29
Korea	97.6	24	97.5	35	92.6	3
Turkey	91.4	77	78.6	84	34.6	30
China	99.5	5	75.5	92	21.6	81

Source: Global Competitiveness Report (2008, 2010).

Table 2. Improvement of educational indicators in Pakistan.

Country	Net enrolment in primary education	Rank (NEPE)	Gross enrolment in secondary education	Rank (GESE)	Net enrolment in tertiary education	Rank (NETE)
Pakistan	66.1	132	32.9	125	5.2	121
USA	92	79	94.1	45	82.9	6
Czech Rep.	89.6	97	94.9	42	58.6	32
Malaysia	96.1	47	68.2	99	32.1	73
Finland	96.0	48	110	9	94.4	2
India	89.8	95	57	108	13.5	101
Japan	100	1	100.9	21	58	34
Korea	98.8	15	97.2	34	98.1	1
Turkey	94.7	60	82	84	38.4	60
China	99.5	7	75.1	92	22.7	82

Source: Global Competitiveness Report (2010–2011).

Due to slow progress in quantity and quality of education, the economic situation of the country is not satisfactory, especially knowledge economy. Educated nations illustrate how education has allowed these countries to successfully compete at international level utilizing their skilled personnel, particularly in the business and economic arena. An East Asian country such as Korea is an example which has stressed primary and secondary education and has been able to produce a highly skilled human resource base, leading to tremendous economic growth. The present educational structure of Pakistan needs to improve to allow the country to establish a good reputation among other educational systems across the globe. We suppose that to control economic instability, the government of Pakistan has to be more vigilant to control both educational and financial losses. Some good steps have been taken by government in the recent past to increase the literacy rate and improve the quality of education. But still Pakistan is far behind having the quality of educational system required for dealing with the challenges of the current economic revolution in the world. Table 3 shows the comparison of educational scores and ranks in developing countries between the periods of 2008 to 2010.

Table 3. Comparison of educational scores and ranks in developing countries between 2008 and 2010.

	2008		2010	
Countries	Score	Rank	Score	Rank
Pakistan	2.9	104	3.3	87
USA	5.0	19	4.8	28
Czech Rep.	4.7	26	4.5	35
Malaysia	5.0	18	4.9	23
Finland	6.2	1	5.6	6
India	4.3	37	4.3	39
Japan	4.5	31	4.5	25
Korea Rep.	4.6	29	3.9	57
Turkey	3.4	77	3.2	95
China	3.8	55	4.0	53

Source: Global Competitiveness Report (2008, 2010).

According to the GCR (2008), on quality of educational system Pakistan's score is 2.9 out of 7 and ranked 104th among 134 countries of the world, whereas Finland scores 6.2 and is ranked 1st; similarly Pakistan's neighbouring countries showed very good performance – especially India which scored 4.3 and ranked 37th in the world. It is imperative that the countries achieving high scores in quality and quantity of education are also leading knowledge economies. Statistics support the fact that education in Pakistan was never Pakistan's strong point. A very encouraging achievement regarding the Pakistani perspective presented in the GCR (2010) shows that only Pakistan and China improved their score and ranking in the case of quality of educational systems which a good sign for knowledge economy prospects in Pakistan. Plenty of effort is required to be competitive among other countries of the world. Therefore policy-makers should take practical steps urgently to improve the quality of education.

3.2 Competitive position in the world

Competitiveness for a nation as a whole is the ability of the nation to support productivity that allows a high and rising standard of living. The competitiveness of Pakistan is not satisfactory among nations of the world and its ranking is very low compared with 134 major countries of the world. The poor ranking in indicators like the global competitiveness index, innovation, efficiencies enhancers and basic requirements shows that the country is lagging behind in overall economy in general and knowledge-based economies in particular. Developed countries like the USA, Finland, and Japan are keener to adopt innovation, technology transfer, and ICT and stand very high in the rankings, whereas Pakistan is ranked 85th. In overall GCI, Pakistan is ranked 101st whereas the USA is ranked 1st, Finland 6th, Japan 9th, and the Czech Republic 33rd. The Global Competitiveness Report (2008–2009) indicates that the countries who are keen in knowledge application in businesses are progressing more then the others. According to GCR (2008) the competitive performances of Asia-Pacific economies continue to encompass the entire gamut, from highly competitive countries to the most challenged. Singapore, Hong Kong (11th), and Australia (18th) continued their ascent in the rankings while Japan, Korea (13th), and Taiwan (17th) dipped in their positions. Nine Asia-Pacific countries are among the top 30, led by Singapore and followed by Japan, Korea, Hong Kong, Taiwan, Australia, Malaysia (21st), New Zealand (24th) – and this year China enters the top 30, displacing Thailand (34th). Other members of the next tier include new entrant Brunei (39th) as well as India (50th), Indonesia (55th), Vietnam (70th), the Philippines (71st), and Sri Lanka (77th). Pakistan (101st) declined in the rankings to join those countries ranked 100 and below, which include Mongolia (100th), Bangladesh (111th), Cambodia (109th), Nepal (126th). Pakistan, at 101st place, benefits from its large market size (ranked 29th overall). However, a number of competitive weaknesses are hindering its ability to fully benefit from the potential economies of scale, mainly related to the human resource base.

Pakistan's ranking in the pillars measuring health and primary education (116th), higher education and training (123rd), labour market efficiency (121st), and technological readiness (100th) is not satisfactory for a nation full of potential and the best natural environment. In addition, there has also been a measurable weakening over the past year in the perceived quality of public institutions: Pakistan ranked 85th to adopt innovation which is poor compared to other developing countries; even India as a developing country is 27th in the world. Innovation makes a powerful case for development policies to focus on key sources of economic growth, particularly the use of scientific and technological knowledge and related institutional adjustments (see Table 4).

Table 4. GCI Index.

Countries	Basic requirement	Efficiencies enhancers	Innovation	GCI
Pakistan	132	95	76	123
USA	32	3	4	4
India	81	38	42	51
Czech Rep.	44	28	30	36
Korea	23	22	10	22
Malaysia	33	24	25	26
Turkey	68	55	57	61
Finland	26	11	6	1
Japan	31	40	32	27
China	42	40	32	30

Source: Global Competitiveness Report (2010), World Economic Forum.

3.3 Problems in developing economic stability

At the moment Pakistan is facing so many problems like terrorism, sectarian tensions, and poor educational system but there are some other factors which cause economic instability in Pakistan. In Table 5, the study provides the list of those problems with their impact on the economy according to the Global Competitiveness Report (2008) and (2010).

Pakistan's savings and investment level can be raised only when the country is in a position to convert unproductive and underutilized human and natural resources into dynamic and self-sustained capital and potential accelerators of economic growth. Pakistan today is trying hard to catch up quickly with the high standards of living of the developed economies through industrial and technological revolution.

3.4 Encouraging steps to improve education in Pakistan

The Higher Commission of Pakistan (HEC) supervises planning and development of public and private sector institutions for higher education. The key issue which HEC will be looking into is the quality of education imparted to the graduates and its relevance to the

Table 5. Problematic factors and their impacts on developing countries in 2008.

Factors	2008	Factors	2010
Inefficient government bureaucracy	10.1%	Inefficient government bureaucracy	8.9%
Inadequate supply of infrastructure	9.9%	Inadequate supply of infrastructure	4.7%
Inadequately educated workforce	8.5%	Inadequately educated workforce	3.6%
Restrictive labor regulations	1.7%	Restrictive labor regulations	0.6%
Poor work ethic in labour force	3.7%	Poor work ethic in labour force	3.1%
Foreign currency regulations	2.5%	Foreign currency regulations	1.8%
Poor public health	0.6%	Poor public health	1.3%
Inflation	10.0%	Inflation	9.6%
Policy instability	8.3%	Policy instability	9.8%
Crime and theft	4.8%	Crime and theft	7.9%
Tax regulations	3.2%	Tax regulations	3.6%
Tax rates	2.3%	Tax rates	5 %
Access to financing	7.5%	Access to financing	5.2%

Source: Global Competitiveness Report (2010, 2011).

economy. To encourage research work in the country it offers scholarships on a merit basis. The government of Pakistan is trying to bring uniformity into education policy. This is the very good and effective measure taken by the government, aiming at establishing a uniform education system all over the country. There has been a great difference between the education system in big cities and small cities and villages; this also causes discrimination among the people residing in different regions, some having good quality education and other low quality education. The uniformity in education system is effective in providing opportunities of higher studies to the people residing in small cities. This will also help in achieving mutual cooperation among the four provinces (HEC 2007).

The government of Pakistan has set a target in its education policy to bring all children from six to 10 years into elementary schools by 2015. The government has aimed at providing higher education for girls and the development of high schools and colleges in the localities where there are no or very low quantities of higher education schools or colleges. The government is trying to set such education system which is common in many developed countries of the world. This is the positive step by the government in making competitive policy for the people of Pakistan (Syed 2010).

4. Conclusion and recommendations

Economic development policy should focus not on 'jobs created' but rather on infrastructure for sustainable 'knowledge enhancement' that acts as a magnet for knowledge-based companies. Technology and knowledge are now the key factors of production. Education plays a vital role in human capital formation. It raises the productivity and efficiency of individuals and thus produces skilled manpower that is capable of leading the economy towards the path of sustainable economic development. Like many other developing countries, the situation of the education sector in Pakistan is not very encouraging. The low enrolment rates at the primary level, wide disparities between regions and gender, lack of trained teachers, deficiency of proper teaching materials and poor physical infrastructure of schools indicate the poor performance of this sector. With increased mobility of information and the global workforce, knowledge and expertise can be transported instantaneously around the world, and any advantage gained by one company can be eliminated by competitive improvements overnight. The only comparative advantage a company will enjoy will be its process of innovation – combining market and technology know-how with the creative talents of knowledge workers to solve a constant stream of competitive problems – and its ability to derive value from information. The transformation from an industrial society to a knowledge society and a global knowledge economy is characterized by the increased importance of knowledge, both technical know-how, and about knowledge with its attributes. This is the time when Pakistan should plan for long-term policies of its future needs, re-study the global trends, and revise its current strategies and more focused towards a knowledge-based economy. Insufficient opportunities for education in Pakistan have contributed to the development of extremist ideologies that have fuelled terrorism and sectarian tensions as well as stifled economic growth. It is very obvious now that success will go to those individuals and countries which are swift to adapt, slow to complain and open to change. We are convinced that the gradual introducing of knowledge economy into Pakistan will soon be able to change its economic prosperity.

4.1 Recommendations

It is not a good sign for the economy if the country exploits the option of seeking loans to run the government or to evade default. It is more unfortunate that there is as yet no

realization around to produce and retain knowledge workers and promote the knowledge economy. It is high time for Pakistan to rethink its future needs, re-study global trends, and revise its current strategies.

- It is required to promote educational system from pre-school to tertiary level such that it can meet the manpower requirements of the knowledge-based economy.
- Teaching methods should be transformed to foster creativity, originality, innovation as well as thinking and analytical skills.
- Ensure that the growth and development of tertiary educational systems are managed to improve access, raise quality and enhance equity
- Encourage universities to evolve so that their leadership and strategic management capacity matches that of modern enterprises, with appropriate strategic, financial and human resource techniques to ensure long-term financial sustainability and accountability requirements.
- Higher education institutions be required to meet the fast-growing demand for high-level skills because the success of the knowledge economy will depend on their performance.
- There is a need to embrace new trends in the educational system. This includes introducing distance learning programmes in institutions as well as encouraging the tradition of exchange students with other countries.
- It is required to increase public-private partnerships that support literacy programmes and strengthen community involvement in education
- There is a great need for collaboration between industries and universities on different platforms to allow graduates to possess the relevant skills for the industry.

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