

# The Role of Technological Transformation in Education at Network Age for Human Resource Development

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## Abstract

Education is supposed to play a vital role for the development of a nation. A number of countries (i.e. Japan, Korea, Singapore and Thailand) have significantly progressed recently through the use of their skilled human resources. Progression of some other countries (i.e. Bangladesh, Pakistan and Nepal) is very sluggish although they have invested a noteworthy amount of fund for the development of education. The findings assert that education of some countries failed to produce a society full of skilled workforce. These countries therefore need the proper information about the target population for education and what types/levels of education should be provided for this targeted population group. This paper has defined a 'network age population' for Bangladesh. This paper also suggests that this population is required to provide technical and vocational education with some revision of education policy in order to ensure the development of Bangladesh.

**Keywords:** Employment Market, Network Age, Societal Dependency, Technological Transformation, Technology Achievement Index (TAI), Workforce Development.

## Introduction

Population is the living wealth of the nation. Development thus centres on expanding the people's choices to lives what they value. An analysis of *growth pattern and age group distribution of population* including *identification of the period of least dependency* provides fundamental basis for planning of population and development. The workforce deployment at the micro-level presents the distribution of the workforce in two major sectors, agriculture and industry, of a number of countries explains the reasons why the developing countries require transforming their workforce from agriculture to industrial sector (Alam, 2008a). The workforce employment pattern, mainly in the context of Bangladesh, presents the percentage distribution of the workforce as professional, mid-level technical person- power and skilled workforce. The education system of the country suffers from very low level of external and internal efficiencies and is mostly non-responsive to the employment market demand (Alam, 2008b). Education is the key to creating, adapting and spreading knowledge for technological transformation in the network age. Basic and secondary education create ability to learn and interpret information, whereas the tertiary education is responsible for producing a higher level workforce, producing new knowledge and adapting knowledge produced elsewhere (Fagerlind & Saha, 1989; Psacharopoulos & Patrions, 2002). Bangladesh having a very small amount of land and natural resources accommodates a population of about 150 million. However, these populations involved with various professions. Some of the professions are not contributing to the national development as they should in the 21st Century because of low use of technological skills (MoP-The Ministry of Planning, 1996). Moreover, primary to tertiary provisions for education are operating targeting different age groups of population but the contributions in producing skilled manpower is not significant enough. The purpose of education is to contribute for the national development by producing skilled graduates and creating a civil society with a decent leadership quality. This helps a country to sustain the challenges of the 21<sup>st</sup> century. Therefore, this article provides an overview integrating population and development, workforce deployment at the macro-level, workforce employment pattern, non-responsiveness of education to employment market in the context of Bangladesh. This article also suggests that

technological transformation in education will help Bangladesh to develop human resource.

## **Data**

The data are derived mainly from the sources like the Reports of the United Nations Development Programmes (UNDP, 1994; 1995; 2001; 2002), the United Nations' Educational, Scientific and Cultural Organisation (UNESCO, 2001), the World Bank (2002), the United Nations Population Division - UNPD (1999), the University Grants Commission of Bangladesh -UGC (UGC, 2001; 2002; 2003) and the BANBEIS-Bangladesh Bureau of Educational Information and Statistics (2007)etc. A series of studies conducted by the first author from 2000 to 2004 involving employment market and education programmes on the technical and vocational graduates have also been used as data sources. Beginning with the largest and from least to highest development of South-East Asian countries that were considered for analysis of situation and data included: Bangladesh, India, Indonesia, Japan, Pakistan and South Korea. Literature is also used to supplement the arguments presented.

## **Population and Development**

Linkage between population and development is important to maintain a positive balance between the socio-economic development and population growth. Rapid and unplanned population growth is likely to create untenable strain on social, economic and natural carrying capacity of the land. According to the Fifth Five Year Plan (FFYP), Bangladesh was 42 million people in 1950 with a density of 290 persons per square kilo metre, while in 2010 the population is projected to be 218 million-a five fold increase (MoP, 1996). As per the projection of the UNPD (1999), during the next 100 years, population of India will increase 4.5 times, Indonesia 4 times, South Korea 2.6 times and Japan 1.3 times. The density of population in 2050 will be 1,515 persons per square kilo metre in Bangladesh, 466 in India, 167 in Indonesia, 527 in South Korea and 290 in Japan (UNPD, 1999).

In Bangladesh, the percentage of population in the age group 5-14 years was 23.1% in 1950, in 1990 the percentage was 28.4%, in 1995 it was 30.1%, and the prospective percentages will be 20.2% in 2010; 15.0% in 2030 and 13.8% in 2050. The number of school-going population of 5-14 years was 9.7 million in 1950, 31.0 million in 1990, 31.0 million in 2000, and the number will be 31.0 million in 2010, 28.35 million in 2030 and 30.0 million in 2050 (MoP,1996). It should be noted that the absolute number of school-going children in the age group of 5-14 years after 2000 will remain steady or rather decrease during the next 50 years. The combined old and young dependency ratio (societal dependency), in Bangladesh was 0.78 in 1950, 1.07 in 1980, 0.69 in 2000, and it is assumed that in 2020 the societal dependency will be 0.54, in 2030 the ratio will be 0.49, and in 2050 the ratio will reach to 0.68 (BANBEIS, 2005). The least dependency ratio for Bangladesh may happen in 2030. This happened for Japan in 1970, for South Korea and Sri-Lanka in 2000 and will happen for both India and Indonesian 2020. The dependency ratio was 1.07, the highest in Bangladesh, in1980 and then gradually started declining. Even counting from 2000, it will take 30 years to acquire a status of highest proportion of active working population. An increased investment on education and health services during this period will help to build human capital to spur accelerated economic and social development. The East Asian Countries took this opportunity of demographic bonus in their development planning. For instance, South Korea increased secondary enrollment from 34% to 84% in early 1970's tripling the expenditure per secondary pupil.

## **Workforce and Development**

The FFYP (1997-2002) projected the total employment to increase from about 50 million in 1996-97 to 56.53 million in 2002 in six major sectors: agriculture, industry, power-gas, construction, transport, and trade and services of the economy (MoP, 1996). The overall projected increase of employment was

12.7%. The sector-wise percentage increase of employment projected was: agriculture 6%, industry 58%, power-gas 105%, construction 15%, transport 17%, and trade and services 14%. The percentage distribution of workforce in 1996-97 and projected for 2001-02 in these six sectors were: agriculture 63% to 59%, industry 7.4% to 10.4%, power-gas 0.21% to 0.43%, construction 2% to 2.11%, transport 4.4% to 4.6%, and trade and services 23% to 23.4%. The actual employment of the workforce in 2001-02 for six sectors was (in million): agriculture 33.38, industry 5.85, power-gas 0.22, construction 1.19, transport 2.62, and trade and services 13.08. The overall percentage distribution of workforce is: family work 40.1%, day labourers 17.8%, on the job 12.4% and self-employment and employing others 29.6% (MoP, 1996).

The UNDP (1994) presented that the agricultural workforce deployment for Bangladesh is 60% of the total workforce and contribution to the economy from this sector is 30% and that for India is 60% and 29%, and Pakistan is 56% and 26%. The rates of deployed workforce in agriculture and contribution to the economy in Sri-Lanka are respectively 49% and 23%, in Australia 5% and 5% and in Japan 7% and 2% (Food and Agriculture Organization - FAO, 1997). It is observed that as the economy moves higher the dependency on agriculture decreases, therefore, the deployment of workforce in agriculture decreases. A cross comparison of agriculture workforce productivity among seven least to most developed countries of the world shows that the per capita contribution of Bangladesh agriculture workforce was US\$ 226, the lowest among these countries. The per capita contribution of the agriculture workforce in US\$ was for Pakistan 404, India 466, Malaysia 4,052, South Korea 5,032, Japan 16,712 and Australia 22,256. The per capita contribution of agriculture workforce of India and Pakistan was about 2 times that of Bangladesh, and for Malaysia 18 times, South Korea 22 times, Japan 74 times and Australia 98 times.

The deployment of Bangladesh workforce in the industrial sector (manufacturing and others) was reported as 16% and contribution to the economy 18% and these figures for India was 16% and 29%, Pakistan 20% and 24%, Sri-Lanka 21% and 25%, Japan 34% and 38% and Australia 26% and 28% (MoP, 1996). For all these countries it is observed that as the economy produces higher contributions from the industrial sector so also the deployment of industrial workforce increases proportionately. Both Bangladesh and India deployed 16% workforce in the industrial sector but the contribution of Indian industrial workforce was 11% higher than the Bangladesh workforce in the sector (Alam, 2008a). There might be a number of reasons for the low level productivity of the Bangladesh workforce but the most important one attributed to this was the low level performance competence of the workforce due to their poor quality of education and training for the job they were occupying. As a result, Bangladesh's industrial goods and services and agriculture products cannot compete even with Indian industrial goods and services and agriculture products. The only remedy to this situation is to improve the competence of performance of the Bangladesh employed workforce through appropriate education and training. A sound basic education of the workforce is an essential pre-condition for improvement of their competence of performance. Unfortunately, as per UNESCO's Dakar Education Forum 2000 Declaration, there were 880 million illiterates in the world in 2000, of which the share of Bangladesh was about 55 million (UNESCO, 2001). The question of education, training, and the performance of the industrial workforce has been briefly examined and presented under the next section of workforce employment pattern.

The percentage contribution of agriculture sector for all these countries was less than the percentage of workforce deployed in agriculture. But the percentage contribution of industrial workforce to the economy for all these countries was more than the percentage workforce deployed. This shows that Bangladesh needs to transform gradually, in a planned way, a large percentage of the employed 33.38 million workforces from agriculture to industrial workforce for rapid economic development. The means appropriate education and training (Alam, 2008a).

## **Workforce Employment Patterns**

The employment pattern shows the distribution of the employed skilled workforce as professional, supervisor/technician and skilled worker. It may also contain unskilled workers depending on the level and type of economy. In 1994, a study on job market for the graduates of Vocational and Technical Institutions (VTI) initiated by Directorate of Technical Education (DTE) and conducted by the Bangladesh Technical Education Board (BTEB, 1994) covering 300 industries/establishments with a 92% response rate emerged with the percentage distribution of 192,251 employed workforce is as: professional 5.2%, mid-level technician 1.8%, skilled worker 73% and unskilled worker 20% (BTEB, 1994). The employment distribution of the 139,248 skilled workers under this study in the National Skill Standard (NSS) in percentage stood as: Master 1.4%, grade I 8%, grade II 52.4%, grade III 27.2% and Basic 11%. In reality, only 1.2% of these skilled workers received some form of training and 98.8% of them were occupying skilled job without any training. Of the 1.2% trained workers only 0.4% received standard training from teacher training college (TTC) and VTI and 0.8% received non-formal training (BTEB, 1994).

A Tracer Study of the Polytechnic Graduates was initiated by UNDP and UNESCO on a project of the DTE. The study was conducted by the BTEB in 1990 covering 182 industries employing 63,106 workforce emerged with a percentage distribution of employed workforce as; professional 11.5%, mid-level technician 14.4%, skilled worker 41%, and unskilled worker 33%. Among the mid-level technicians only 36% were polytechnic graduates and 64% of the posts were occupied by workers without having required background and qualification. A Tracer Study of Polytechnic Graduates jointly initiated and conducted by DTE, BTEB and the Institute of Diploma Engineers Bangladesh in 1997 covering 200 industries with response rate of 97% and employing 119,777 workforce, found the percentage distribution of employed workforce as: professional 6%, mid-level technician 9%, skilled workers 51%, and unskilled workers 34%.

A Study of Exportability of Skilled person-power from Bangladesh initiated and conducted by the BTEB in 1993 made a detailed analysis of person-power export for five years from 1988 to 1992 based on data available with the Bureau of Manpower Employment and Training (BMET). The BMET does not follow a recognized classification of person-power but the percentage distribution of the exported person-power for 1992 was as: professional 6%, skilled worker 27%, semi-skilled worker 16% and unskilled worker 51%. From 1988 to 1992 the person-power export increased about four times, whereas the remittance increased by 1.4 times, as a result of exporting large number of unskilled workers. As many as eight reasons were identified for low remittances but the most critical one was the large-scale export of unskilled workers (BTEB, 1994).

All these and a number of other studies (not mentioned here) were designed and conducted for a generation projected future 5-10 years skilled person-power requirements along with their types of vocational and technological areas of specialization. In 1995, the percentage distribution of the employment pattern of employed workforce in South Korea, was as: professional 4.5%, technician 16.7%, skilled worker 65.8% and unskilled worker 13%. For Germany and Japan the distribution was as: professional 6%, technician 58% and skilled worker 36%. In the VTI graduate study conducted in 1993 the mid-level workforce was found to be only 1.8% whereas the mid-level workforce in South Korea was 16.7%, Singapore 40% and Japan and Germany 58%. It is observed that as the economy moves higher, the need for mid-level technicians increases. This finding provides a very significant clue for deciding the type and level of human resources the country needs to plan and develop for accelerating economic and social development.

### **Non-Responsiveness of Education to Employment Market Demand**

Scanning through the employment pattern of these studies and experiences of other countries it becomes evident that the employed professional workforce ranges between 4.5% to 6% in most of the

countries and even the average professional person-power export from Bangladesh is limited to about 6%. But the mid-level technician, the mid-level workforce in the employment pattern, increases with the growth of the economy. It was observed in a particular study that mid-level technician employment in Bangladesh was about 1.8% whereas South Korea was 16.7%, Singapore 42% and Japan and Germany 58% in 1994.

The Universities and the other tertiary education institutions are responsible for the education and training of the professional workforce. And logically, the secondary and post-secondary education institutions are required to cater to the needs of education of mid-level technicians and skilled workers. Analyzes of the syllabus contents of the general secondary, higher secondary and Madrasha (Dakhil & Alim) [1] courses show very clearly that these programs are neither intended nor designed in any way to produce graduates with employable skills. Rather, the graduates seek admission to next higher stages of education: however, in most of the cases there is no provision for admission to produce graduates with employable skills. As a result, the external efficiency of the education system is seriously questionable. The secondary data collected from Education for All (UNESCO, 2001) Assessment of Primary and Mass Education Division (PMED) of the Government of Bangladesh, BANBEIS (1997) and UGC (1997) showed in 1997, the combined enrollment in primary schools and in Ebtadyee Madrasha was (in million) 19.19, secondary school and Dakhil Madrasha 6.96, higher secondary and Alim Madrasha 0.74 and tertiary 0.55.

The internal efficiency of the education system is also in a very deplorable status. The combined results of all the public examination systems of 1996, the pass rate was about 36%; at Secondary School Certificate (SSC) 42.61%, Higher Secondary Certificate (HSC) 24.77% and tertiary 49%. For 1997, the average combined pass rate in public examinations was 47.78% and that was in Dakhil and SSC 54.2%, Alim and HSC 37.36% and tertiary 55.24%. This demonstrates a system loss of 64% in 1996 and 52.22% in 1997 in education. The nationally-accepted system loss of electricity is 32% though in most of the developing and developed countries this is limited to 6 to 10%. The system loss of electricity is economic loss but education system loss contributes to both economic and social loss, leading to social unrest and disruption (Alam, 2008b). The education resource allocation and utilization pose a more critical threat to the achievement of the goal of quality EFA. As per the World Development Report 1994, 10% of the richest people consume 72% of allocated education resources in Bangladesh (World Bank, 1995).

The allocation of resources to education supports this finding by the World Bank. The ratio of per capita recurrent expenditure of Gross National Product (GNP) per capita (US\$ 220) in 1996 was for: primary school 0.06, non-government secondary schools (with government subvention) 0.07, government secondary schools 0.28, cadet colleges 4.7, polytechnic 1.45, VTI 1.2, tertiary (average) 2.47, Bangladesh University of Engineering and Technology (BUET) 3.3 and Bangladesh Agricultural University (BAU) 5.56. The students from the non-government secondary schools, government secondary schools and cadet colleges are required to study the same curriculum, sit for the same SSC examination with a higher differentiated financial input in these three types of the secondary education institutions. In the primary level the student teacher ratio in Bangladesh was 76:1 in the public schools in 1998 whereas this ratio was 22 in China, Thailand and Indonesia while the ratio was 18.4 in Malaysia. Primary is being the first unfurling stage of intellectual capability of the children, so it is important to understand; what kind of society we are aiming at with this level of input to primary education and how we are going to compete with other competitors in the global market.

Turning to the findings of the studies conducted on the job market and on the secondary and post-secondary vocational and technical education it appears that this sub-system could not produce quality graduates as per the need and demands of the job market. Surprisingly, a study conducted on the four parameters: education, occupation, income and housing value, the socio-economic status (SES) mobility of employed VTI graduates was negative. About 90% of the employed graduates ended up with annual

income less than the 56% of their parents. The teachers of the VTI were found to possess only 28% of the required competency derived from their background in terms of industrial experience and training, teacher experience and training and management training. The SES mobility of employed polytechnic graduates followed a well-set rising ladder in the job market. But the teachers of different categories were found to possess only 14-28% of the required competencies. Allocation of fund for instructional materials was only from 11-19% of the requirement of different technologies. With in the current climate, providing adequate importance to information and communication technology(ICT) and technological transformation with in the education system in Bangladesh is very critical because of the nature of its current administrative process. Before discussing the administrative process we have included the status of information and communication technology in Bangladesh.

### **Information and Communication Technology and TAI**

The ICT is a very fast growing new technological area which is entering Bangladesh, both in education and in the job market, but is still in its infancy. The ICT has opened global job market where people with competence can do jobs staying in their own houses without going to or attending the work place. Two examples are presented to explain how ICT works:

- Example one: *Making New Technologies Work for Human Development, more information can be sent over a single cable in a second than in 1997 was sent over the entire internet in a month. The cost of transmitting a trillion bits of information from Boston to Los Angeles has fallen from US \$150,000 in 1970 to only 12 cents today (UNDP, 2001).*
- Example two: *Knowledge for Development, in Singapore the traders transmit their import and export declaration from their office computer to the Trade Development Board for customs clearance which issues the necessary approval within 15 minutes after routing as many as 20 government departments and agencies. After receiving the approval, the trader prints and signs the document to obtain the release of the cargo. This has resulted in ship turnaround time as less than 10 hours and the Singapore port stands as the most efficient in the world. Trader receives cargo direct from the ship that reduces the cost of warehousing the cargo. Singapore government has valued these efficiencies to over 1% of GDP (The World Bank, 1995).*

Where Bangladesh stands with ICT education is of interest. The UNDP (2001) introduced the technology achievement index (TAI) which aims to capture how a country is creating and diffusing technology and a human skill base, reflecting capacity to participate in the technological innovations of the network age. The TAI that measures the countries' ability to participate in the network age, focuses on four dimensions and selected indicators. The dimensions and indicators are shown in the Table 1.

**Table 1: Four Dimensions of TAI and Selected Indicators**

<b>Dimension</b>	<b>TAI Indicators</b>
1. Creation of Technology	1.1 Patent Granted per million people (1998)
	1.2 Receipt of royalties and licence fee per thousand people (US \$ 1999)
2. Diffusion of recent innovation	2.1 Internet hosts per 1000 per 1000 People (2000)

- 2.2 High and medium technology exports as percentage of total exports (1999)
- 3. Diffusion of old innovation
  - 3.1 Telephone including cellular per 1000 people (1999)
  - 3.2 Electricity consumption kwh per capita (1998)
- 4. Human skills
  - 4.1 Mean year of schooling age 15 and above
  - 4.2 Gross tertiary science enrollment ratio (1995-97 percentage)

Out of the four dimensions of TAI measures the Bangladesh's achievement value for creation of technology and diffusion of recent innovations is negligible in comparison to 72 countries included for TAI computation and is not accounted for. For two other dimensions, diffusion of old innovations and human skills, the values are very low. The value of two indicators of diffusion of old innovations, telephone including cellular per 1,000 people (UNDP, 1999) and electricity consumption kwh per capita (UNDP, 1998) for Bangladesh were 5 and 81, for Pakistan that were 24 and 337, India 28 and 384, Indonesia 40 and 320, South Korea 938 and 4,497 and Japan 1,007 and 7,322. The value of two indicators of human skills, mean year of schooling age 15 and above and gross science tertiary enrollment ratio (1995-96 percentage) were 2.6 and that for Pakistan 3.4 and 1.9, India 5.1 and 1.7, Indonesia 5 and 3.1, South Korea 10.8 and 23.2 and Japan 9.5 and 10.

The achievement level of TAI in these countries is a higher level of human skills found in two indicators: mean year of schooling and gross tertiary science enrollment ratio. These two indicators are dependent on the level, type and quality of education of the country. Developing countries require developing professional researchers and mid-level technicians to acquire, absorb and use ICT in order to enter and grow in the technology-based global chain of economy.

### **TAI and Policy Priorities**

The technology achievement index focuses on four dimensions and eight indicators at the country level. The TAI values calculated for 72 countries on the basis of the available data on the indicators showed three trends: a map of great disparities among countries; diversity and dynamism in technological progress among developing countries; and, a map of technology hubs superimposed on countries at different levels of economic development. The four criteria that were used while consulting government sources, industry and media to rate and identify the technological hubs were: 1. ability of the local universities and research facilities to train highly skilled workforce or develop new technologies; 2. the presence of established companies and multinational corporations to provide expertise and economic stability; 3. population's entrepreneurial drive to start new ventures; and, 4. the availability of venture capital to ensure that the ideas make it to market.

Technological achievements are important for human development but the TAI measures only technological achievements. TAI does not indicate how well these achievements have been translated into human development. The TAI shows high correlation with the human development index (HDI), and it correlates better with HDI than with income. As the World Bank (2002) states that poor countries and

poor people differ from rich ones not only because they have less capital but because they have less knowledge (World Bank, 1995). The balance between knowledge and resources has shifted so far toward the former that knowledge has become perhaps the most important factor determining the standard of living; more than the land, the tools and the workforce. Today's most technologically advanced countries are truly knowledge-based. There are many types of knowledge but two types, that are critical for development, are 'knowledge about technology' and 'knowledge about attributes'. Knowledge about technology is technical knowledge such as software technology, aerodynamics etc. Unequal distribution of technical knowledge across and within countries creates knowledge gaps. Knowledge about attributes is the knowledge of the specification of the quality of product and services. Incomplete knowledge about attributes is an information problem.

Education is the key to creation, adoption and spreading knowledge. Basic education increases people's capacity to learn and interpret information. But higher and technological education is critical for enhancing skills of workforce, producing new knowledge and adapting knowledge produced elsewhere. The challenge for the developing countries is to gear up their capabilities, both human and institutional, so that all sectors including firms and individual can acquire, adapt and use knowledge effectively. According to a statement by the President of South Korea:

*"We are living in an age of knowledge and information, fraught with opportunities and dangers. There are opportunities for the underprivileged and poor to become rich and strong. But at the same time there is a danger that gap between rich and poor could widen. The message is clear. We must continue to develop our human resources. The success or failure of individuals and nations as well as the prosperity of mankind depends on whether we can wisely develop our human resources" (UNDP, 2001).*

### **Current Administrative Constraint in Bangladesh for Policy Formation**

In order to respond significantly with the TAI measurement, Bangladesh urgently needs to design a scenario ensuring a linkage between education and the need of manpower. Designing a scenario plan always requires changes of policy. The study findings in this context of policy decision making raises a very grave question and extraction, which is given below:

The type of decision model the country is following is mostly the root of evils. As an example, the model starts working in the Directorate from the Head Assistance who puts the proposal in the file with noting then it passes through Assistant Director, Deputy Director, Director and to the Director General. In initiating the noting and passing it through the route up to the Director General is very cumbersome. A file may not start or stay at any stage without any "*tatbir*" [2] in different stages. A similar ladder of the movement of the file exists in the Ministry. The proposal from the Director General is first scrutinized by the Assistant Secretary when the Administrative Officer of the section very kindly puts it up in the file. Assistant Secretary, usually being a generalist in the administration, has very little understanding of the underlying technical aspects of the proposal of the Directorate. The file from the Assistant Secretary usually routes with very little to add to the Minister for consideration. Normally, if the Minister has any query on the file, it then follows the same route to comeback to the Assistant Secretary to meet up the query and again routed the same way through the stages to the Minister. The decision-making process is hinged virtually between the Minister and the Assistant Secretary's capability.

The route between the Administrative Officer and the Minister involves more red-tape than the route of the Directorate's file movement. With these steps in the decision model it breeds corruption, inefficiency, persistent incompetence, causes unusual delay in decision-making, and makes the decision makers unaccountable (Alam, 2008b).

The basic issue for the country is to discard the existing model of decision making and switchover to a model which makes the decision maker accountable for the decision. Why does the Minister not give a decision on the proposal of the Director General and makes the Director General responsible for policy proposal and implementation of the approved policy and accountable for consequences, instead of making him a person in the present situation as a provider of the clerical services to the Assistant Secretary of the Ministry? It is not so easy to change the decision model. Enhancement of the capability of the Directorate is an essential pre-condition for any change, which is difficult. Once a bad system is in operation it can be very difficult to dislodge. Strong interests develop to continue the bad system, however inefficient, corrupt and unfair.

## **Conclusion**

The macro-level agriculture workforce per capita contribution to economy in India and Pakistan is about two times that of Bangladesh and in Malaysia 18 times, South Korea 22 times, Japan 74 times and Australia 98 times. The per capita contribution of Bangladesh industrial workforce is 11% lower than the Indian industrial workforce.

The employment pattern of the employed workforce reflects an uneven distribution of the different levels of working person-power with 97% skilled jobs occupied by workers without having any appropriate education and training. These untrained workers are occupying 64% of the mid-level technician jobs. The secondary general education is totally non-responsive to the needs of the job market. The technological achievement index (TAI), as a new measurement of Bangladesh's ability to participate in the technology-based global network economy, is very low. The secondary and post-secondary vocational and technical education faced with different problems failed to produce graduates with employable skills. The unplanned resource allocation forces 96% of the boys and girls in the non-government secondary schools with government subvention to end up with a poor quality of education whereas 10% of the top class population enjoy 72% of the education resources. As a result, the education system is breeding inequality and inequity in the society. The shining prospect of demographic transition of least dependency with highest proportion of active working population in 100 years is lying ahead. There is an acute shortage of researchers and mid-level technical person-power to absorb and use ICT in education, and in production and services. Any attempt to resolve arbitrarily these issues, problems and barriers of the education system (the country is facing) will be suicidal. There are a lot of other issues that could not be raised due to the limited scope of this article and at the same time it would be unwise to think of identifying all problems and barriers without entering into that world and understanding the causes from where and how they stem. In order to identify and resolve the problems and barriers the education system is facing, the most important preconditions are to ensure very strong political commitment, willingness, understanding, and tolerance for building sound institutional and professional capability.

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### Notes

[1] Dakhil and Alim are the same-level degrees as SSC (Secondary School Certificate) and HSC (Higher Secondary Certificate) respectively, provided through religious education system called Madrasha Education System in Bangladesh.

[2] To make a high level illegal jack and channel to gain personal benefit.

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