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From Knowledge Creation to Economic Development: The Missing Links in Muslim World

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ABSTRACT

The paper discusses the cause and consequences of the deterioration and depressing condition of higher education in Muslim countries. The study establishes the links between academic research and economic development. Alternative hypothesis to envisage the causes of sustainable economic development were discussed with historical evidences. The hypothesis of external conspiracy was not accepted in the study and it was concluded that weak human resources are mainly responsible for deterioration in the higher education.

I: Importance of Knowledge Creating activities for Muslim World:

To decode the secret of sustainable economic development was not a simple task and all the attempts to theorize the growth causes and to construct the growth models have been failing in different circumstances in different times. However, the last three centuries have proved at least a significant positive relation between the economic growth and the continuity in the creation and utilization of knowledge. This relation will be discussed with details in section II of this paper.

Regardless of their economic implications the knowledge-based activities are important for the Muslim societies from their religion's point of view. In respect of the importance of knowledge creating activities, the irrevocable evidences are available in the Muslim religious literature. According to the Muslims' beliefs, the Holy Quran is the book consists of the words of Allah. The book describes that what Allah wants by the peoples. In Islamic terminology, Allah's orders are known as 'Fard' (obligatory). About one-third verses of the Holy Quran, give the orders and instructions for the research and to collect the observations and knowledge about the things in the universe. The nature of this order is communal. It does not apply on individuals but it is for whole Muslim community. So the research and knowledge acquisition is like a 'Fard-e-Kifaya' – a communal obligation can be fulfilled if not all but some persons perform it.

It is important to note that in the verses of Holy Quran, different words of preys are associated with different prophets. Adam requested for pardon, Moses asked for the power of communication, Jesus asked for the determination in the way of Allah and Muhammad (PBUH) asked for extension in the knowledge. It implies the importance of the 'creation of knowledge' for Muslims.

In Muslim terminology, Hadith means the saying or action by the prophet (MPBUH). Once the Prophet MPBUH asked the Muslims that every sort of knowledge and wisdom is the inheritance of a Muslim, he (must) pick it wherever it is found. According to the Hadith, "Acquisition of knowledge is obligatory for every Muslim Man and Woman".

It is clear from the above-mentioned evidences and from the sources of Muslim beliefs that all the creation and acquisition of knowledge are desirable and obligatory activities for the Muslim societies.

Besides its religious importance, the knowledge related activities are also important from the economic development point of view. The strong and significant evidences are available in favor of the positive correlation between economic development and knowledge related activities. Their dependency and cause and effect relationship will be discussed in section II.

Table: I shows that economic development of the countries are highly correlated with their contributions in research activities (Mehtar: 2004b). Table: II shows the changing in the patterns of foreign trade. It is evident that share of knowledge-based products is rapidly increasing in world trade basket. While, the contribution of primary goods is declining in the world trade activities. The knowledge-based technology has the largest share in world trade basket at present.

Table: I
Economic Development and Knowledge Based Activities

| Country | GDP 2002 (\$ Billion) | Exports 2002 (\$ Billion) | High Tech Exports 2002 (% of Manuf. Exports) | Expenditure for R & D 1996-2002 (% of GDP) | Researchers in R & D 1990-2001 per million people | Scientific & Technical Journals Articles 1999 | Royalties Received 2002 (\$ Million) |
|----------------|-----------------------|---------------------------|--|--|---|---|--------------------------------------|
| Egypt | 90 | 4 | 1 | 0.19 | 493 | 1,198 | 38 |
| France | 1,431 | 332 | 21 | 2.20 | 2718 | 27,374 | 3,241 |
| Germany | 1,984 | 613 | 17 | 2.50 | 3153 | 37,308 | 3,765 |
| India | 510 | 49 | 5 | NA | 157 | 9,217 | 12 |
| Israel | 104 | 30 | 20 | 4.96 | 1563 | 5,025 | 389 |
| Japan | 3,993 | 417 | 24 | 3.09 | 5321 | 47,826 | 10,422 |
| Malaysia | 95 | 93 | 58 | 0.40 | 160 | 416 | 12 |
| Pakistan | 59 | 10 | 1 | NA | 69 | 277 | 2 |
| Turkey | 184 | 35 | 2 | 0.64 | 306 | 2,761 | 0 |
| United Kingdom | 1,566 | 280 | 31 | 1.90 | 2666 | 39,711 | 7,701 |
| United States | 10,383 | 694 | 32 | 2.80 | 4099 | 163,526 | 44,142 |

The creation and utilization of knowledge is the key element to promote the technological advancement and as well economic development. The creation of knowledge is the core function of the universities and the institutions of higher education. To accelerate the economic growth and to develop the meaningful relations with the industry, university faculties have to find the new technologies. They have to create new ideas; they have to formulate new theories and procedures. All of those are the parts and elements of the knowledge creating activities.

Table: II
Share of Technological Innovations in Global Trade

| TYPE OF COMMODITY | 1978 | 1998 |
|---------------------|------|------|
| High Technology | 11 % | 22 % |
| Medium Technology | 22 % | 32 % |
| Low Technology | 21 % | 18 % |
| Resource Based | 11 % | 11 % |
| Other Primary Goods | 34 % | 13 % |
| Miscellaneous | 1 % | 4 % |

Despite of its religious-based importance and its role in the economic development, the state of higher education and knowledge creating activities in the Muslim world shows a depressing and deteriorated picture. It is notable that among the 200 finest universities in the world, not even a single is located in a Muslim country. (Dawn: Nov 28, 2004).

Higher education has always been an important component of the social agenda, but it has acquired a new importance today. In the emerging 'knowledge economy', nations that fail at creating a decent learning environment will lag behind, and end up becoming virtual colonies of those that do succeed in this regard (The Boston Group: 2004). With some notable exceptions, in most of the developing world the potential of higher education to promote development was being realized only marginally (UNDP: 2000).

After realizing its role in economic development, higher education has started to regain its importance in academic and policy discussions in the developing countries with substantial Muslim populations. A series of reports have been written in the last decade on the state of higher education in those countries. A study of these reports shows that there is a broad similarity among the issues faced by higher education in those countries. (Aga Khan University: 2002).

The dependency of economic development on academic research, innovations and technological advancement may have multi dimensional linkages and inter-dependency between the availability of fiscal resources and accelerated marketable technological advancement. The identification of the nature of those relations is the core objective of this study.

The other objectives of the study is to test the following hypothesis:

1. The economic development has strong and significant correlation with the higher education and academic research;
2. The second hypothesis in this study is concerned with the causes of deterioration and stagnancy in the system of higher education in Muslim World. Two alternative hypothesis are proposed to test: (I) the lack of genuine research, stagnancy and deterioration in the Muslim world universities were created by internal systematic problems. Those problems may be a joint outcome of socio-political and cultural deterioration and the lack of economic resources, (ii) the alternative hypothesis is that this deterioration in the higher education is an outcome of a conspiracy of external forces.

II: Economic Development and Higher Education: Causal Relations

A) Historical Evidences:

If one looks at the history of economic development, it will be difficult to find out a "Cause and Effect " relationship. The Greek Empire was on the top rank of economic development in 500 B.C. Then Romans came on the top rank. Then, Persia, Arabia, Turkey, India, Spain, Germany, Britain, Russia, China, and Japan reached respectively, at the top of the ladder. Now, the United States is on the number one position.

A research report, published by the Stanford Economic Department establishes a link between economic history, economic theory, and the application of technology (World Bank: 2000). The sources of competitive strength are never constant for long. The scientific

developments in academia are required for technological advancements. Scientific development is an outcome of the knowledge-creating activities in the universities. This scientific development produces innovations, inventions and technological advancements. If a country wants to achieve the higher growth targets, it will have to create the links between academic institutions, industrial units, and economic planning. America's success has been sustained because of the harmonization between academia, industrial management and macro economic policy making.

The ability to adopt such dynamic changes requires a crucial talent. The promotion and adoption of innovations and inventions in the physical and biological sciences should have consistency with social and economic requirements and activities. Social and management sciences provide the catalyst and environment to convert those scientific developments into economic development.

History of economic development gives a common observation from all the developed nations. The developments in the social and management structures were appeared always before the technological and scientific changes. There is no evidence in the history where this process is reversed. Those policies have always failed when tried to revolutionize the scientific and technological development before socio cultural changes.

History of development (Table: III) concludes that monetary and industrial developments were linked with the parallel socio-political developments. The physical and biological sciences were developed in those societies where the scholastic development in Economics, Management Sciences, Sociology, Psychology, Political Sciences, Administrative Sciences, and Anthropology were taking place. One cannot ignore the role of Rousseau, Karl Marx, Martin Luther and Keynes in development of the nations. The changes in the western nations' overall attitude in favor of scientific development were occurred after the end of crusades and after a successful religion's reform movement. In Europe scientific development followed the societal change after Rousseau's ideas and Martin Luther's religious reform's movement. This theory is confirmed also by the Muslim history. The Arabian land produced the intellectuals, scientists and scholars after the changing in the social attitudes because of the raising of Islam in the region. The region has not produced such scientists and thinkers in the age of brutality. The golden age of scientific development appeared in the Muslim World after social and managerial changes in Arab land. Soviet scientific development was based on the changes in the social and administrative ordering in the states of USSR. The United States reached at the top of ladder after the constitutional and social reforms at the end of a civil war. Before the scientific and technological development in the United States, it introduced the concept of personal freedom, law against the slavery and many more such reforms. The United States joined and led the journey of the scientific development after socio-political reforms in the society. Such socio-cultural changes are created sometime by endogenous factors like the Islamic revolution in the Arabian deserts, religious and social reforms in Europe, and the political reforms in Soviet Russia and the United States. However, exogenous factors can also play an important role - like industrial development in Japan after World War II.

It is a misunderstanding that scientific development changes the societal attitudes. The development of social sciences leads to the scientific development. The change in the social attitude must be 1st step in the planning of scientific development. It is also a misunderstanding that militancy power or political hegemony lead to the economic development. The economic developments in those societies, which do not have the

capabilities of continuity in the creation of knowledge, were not sustainable. The borrowed technology is not a source of sustainable development. Historical evidences confirm that civilization with great militancy power have been failing to survive without a continuity in the knowledge creating activities through social and academic development. Ottoman Empire, the Mongols brutality, the ancient Romans, and history of the other empires show the irrelevancy of militancy power for sustainable economic developments. Use and hold of militancy power – whether in a planned military institution or individual terrorism – has not proved a source of sustainable development. The noble missions or terrorist activities – whatever you call it – in Philistine, Chechnya, Afghanistan, Iraq, Algeria, Egypt, Lebanon and the Subcontinent have not proved their utility for long-term development. Militancy powers of ancient Romans, Persians Mongols and the former Soviet Union have not confirmed the correlation of military power with the sustainable development. The militancy power may be useful to defend the economic assets and structures; it cannot develop the long-term economic structure. The creation of knowledge is the only factor for sustainable economic development; all other factors provide the environment and catalysts for the development process.

Table: III
Correlated Development in Physical and Social Sciences

| Year | Monetary and Financial Development | | Socio-Political Changes | | Industrial Development | |
|------|------------------------------------|---------|--------------------------|---------------|-----------------------------|---------|
| | Incident | Country | Incident | Country | Incident | Country |
| 1024 | 1 st Paper Money | China | | | | |
| 1300 | Banks' thriving | Italy | | | | |
| 1517 | | | Martin Luther 95 Thesis | Germany | | |
| 1553 | 1 st Equity Share | Britain | | | | |
| 1600 | East India Company | Britain | | | | |
| 1693 | 1 st Stock Exchange | Britain | | | | |
| 1733 | | | | | Flying Shuttle in Textile | Britain |
| 1765 | | | | | Steam Engine | Britain |
| 1769 | | | | | Spinning Machine in Textile | Britain |
| 1776 | | | Human Rights Development | Western World | | |
| 1848 | | | Communism Manifesto | Europe | | |
| 1853 | | | Adoption of Technology | Japan | | |
| 1865 | | | End of Slavery | USA | | |
| 1865 | | | End of Civil War | USA | | |
| 1876 | | | | | Telephone | USA |
| 1879 | | | | | Electric Bulb | USA |
| 1903 | | | | | Aero Plane | USA |
| 1907 | | | | | Invention of Plastic | USA |
| 1908 | | | | | Car | USA |
| 1917 | | | Formation of USSR | USSR | | |
| 1922 | Financial Derivatives | USA | | | | |
| 1924 | | | Modernization Move | Russia | | |
| 1938 | | | | | Greenhouse Effect | Britain |
| 1940 | | | End of Colonies | World | | |
| 1944 | | | | | High Yield Grains | USA |
| 1946 | | | | | General Purpose Computer | USA |
| 1947 | | | | | Transistor | USA |
| 1949 | | | Communism in China | China | | |
| 1969 | | | | | Man on the Moon | USA |
| 1971 | Plastic Money | USA | | | | |
| 1983 | Junk Bonds | USA | | | | |
| 1987 | Electronic Money | USA | | | | |
| 1991 | | | Fall of USSR | USSR | | |
| 2005 | | | Free Market Regime | World | | |

Table: IV
From Ideas to Marketing

| STAGE | ACTIVITY | QUANTUM OF ACTIVITIES |
|----------------------|----------------------------------|------------------------------|
| 1 st Step | Unwritten Raw Ideas | 3000 |
| 2 nd Step | Ideas Submitted for Publications | 300 |
| 3 rd Step | Small projects | 100 |
| 4 th Step | Large Developments | 8 |
| 5 th Step | Major Developments | 4 |
| 6 th Step | Launches | 2 |
| 7 th Step | Success | 1 |

Table: V
Muslim World Contribution in the Economic & Scientific Development

| Economic Variable | Share of Muslim World |
|---|------------------------------|
| Area and Population | |
| Surface Area | 23.0 % |
| Population | 20.0 % |
| Macro Economic Variables | |
| GDP | 4.5 % |
| Merchandise Imports | 7.2 % |
| Merchandise Exports | 7.5 % |
| Outstanding External / Foreign Debt | 26.0 % |
| Finance and Investment | |
| Market Capitalization | 1.3 % |
| Trading Value of Shares | 1.6 % |
| Number of Listed Companies | 9.5 % |
| Foreign Direct Investment | 5.4 % |
| Head Quarters of Top 500 MNCs | 0.0 % |
| Research and Development | |
| Number of Scientists and Engineers in R & D | 2.0 % |
| Number of Technicians in R & D | 1.0 % |
| Expenditure in R & D | 0.6 % |
| Income from Royalties | 0.2 % |
| Expenditure on Royalties | 1.0 % |
| Applied for Patents by Residents | 0.5 % |
| Applied for Patents by Non-Residents | 9.7 % |

**Table: VI
Innovation's Phases**

| Wave | Period | Duration | Inventions |
|-------------|---------------|-----------------|---|
| First Wave | 1785-1845 | 60 Years | Water Power; Textiles; Iron |
| Second Wave | 1845-1900 | 55 Years | Steam Rail, Steel. |
| Third Wave | 1900-1950 | 50 years | Electricity, Chemicals, Internal-combustion Engine |
| Fourth Wave | 1950-1990 | 40 Years | Petrochemicals, Electronics, Aviation |
| Fifth Wave | 1990-2020 | 30 years | Digital Networks, Software, New Media. |

B: Transformation of Research into Economic Development:

To convert the knowledge into economic development, universities lead (do not follow) the industry. It is a notable difference between the role of higher education and vocational education that higher education institutions lead the industries because they work for future. They innovate, invent and develop the new products, process and systems with the help of new ideas and knowledge advancement. While, vocational education supplies the workers and qualified professionals for the existing system.

Economic growth, technological advancement, scientific development, knowledge creating activities and academic research are jointly determined factors. The academic research is ultimately transformed into economic growth. However, objectivity, originality and acceptability are the pre conditions for the correlated movements of the above-mentioned factors. By objectivity we mean a pre-defined and clear objective of the research. Useless and some time even meaningless objectives are defined in the research. The prophet of Islam had prayed for God's protection from a knowledge, which did not provide the yield. To develop the purposeless hypothesis is just wasting of time, resources and abilities. It was a common practice in academic research that researchers have been trying to prove the non-objectives or to discuss the non-issues.

By originality we means there must be no plagiarism; it is very common in the developing world that doctoral dissertations and articles in the journals to fulfill the quantity of publications are heavily based on plagiarism either in the form of a borrowed model or reproducing the text or replication of the methodology.

By acceptability we means the work must be passed through an unbiased, impartial, fool proof system of review and scientific process. At first stage, it must be accepted by the academia, at second stage by the industry and at the third stage by the society or masses. The basic function of the academic journals – peer reviewed journals – is to ensure the application of those pre-conditions in a research work – objectivity, originality and acceptability. Those journals provide the brief and initial details of newly created knowledge with identification of the areas of its utilization and policy implications. Such published works may also be useful for the investors, industrialists and policy makers in searching of the new ventures.

The research-oriented higher education in the western world developed this viable and objective oriented research system in the universities. First, the ideas are submitted in the universities, where scientists, researchers, or economists test and verify the originality and usefulness of the ideas. Out of 300 submitted ideas, one hundred are converted only into

small projects at the centers of excellence in the universities and only eight ideas are reached at the stage of large projects. The industrialists and large business organizations provide funds for research only for those eight projects to get the research outcomes for commercialization (Mehtar: 2004b). One out of 3000 ideas may succeed in the ultimate marketing of the new innovations. This commercialization of ideas, which accelerates the economic development – is transformed from academies to the centers of industrial investments. The big financial houses and the large pharmaceutical, chemical and engineering companies are included in the research sponsors of the big universities.

It was observed (Mehtar: 2000) that the overall rate of return from successful innovations was averaged 56%, compare that with the 16% average return on other investments over a period of 30 years. However, the research does not provide a guarantee for such handsome profits. The attractive profits through innovations are directly linked with the high risk. Table: IV shows that one out of 3,000 ideas may success in the marketing of the new innovations, implies that the probability of success is 0.125 (or 12.5 percent); because, the industrialists spend their funds on eight selected projects only. The Centers of Excellence in the universities and academic journals play an important role in the screening process.

It was observed that academics support research directly leads to technological innovation. Because the returns to creating and adapting new knowledge are difficult for any individual (or any school, firm, or research institute) to appropriate spillover effect – an externality. There will be under investment not only in research itself (even research aimed at adaptation rather than creation) but also in the key factor in the production of research, namely researchers. That is one reason why universities and governments generally subsidize graduate students acquiring research degrees rather than those earning professional degrees – the latter already pay off handsomely to the degree holders (World Bank: 1999).

The creation, acquisition and absorption of knowledge are three different activities required for knowledge-based economies. The most important step in creating a research and innovation environment is to promote higher education and research activities in academia. The production of new knowledge is generally associated with higher-level teaching and research. In industrial countries university research accounts for a large share of domestic R. & D. The same is true in most developing countries, but on a smaller scale. Of Course, high and fast growing university enrollment do not guarantee rapid growth. Universities thus serve a multiplicity of roles – not only enhancing the skills of future workers but also producing new knowledge and adopting knowledge produced elsewhere. The fact is that universities throughout the world package these activities – teaching and research. – Suggests that there is strong complementariness between them (World Bank: 1999). According to the globally accepted and adopted system of knowledge related activities, the universities are responsible for the ‘production or creation’ of knowledge. In the golden age of Muslim civilization, this function has also been performing by the universities (*Darul-Uloom* and *Jamias*) in the major cities of the Muslim world. Transformation and acquisition of knowledge is a subordinated activity, which is performed through teaching process either in the universities or colleges or the institutes of professional and vocational education. While, the absorption of knowledge is a broad based activity mainly covered by the industrial and commercial enterprises and the socio-political administration and generally speaking by the entire society.

Table: VII
The Pioneer Research Publications in 20th Century

| Year of Publication | Author/ Researcher | Country/ Region | Publication |
|----------------------------|---------------------------|------------------------|---|
| 1900 | Sigmund Freud | Europe | Interpretation of Dreams |
| 1936 | John M. Keyres | Britain | General Theory of Employment |
| 1943 | Jean-Paul | French | Being and Nothingness |
| 1946 | Benjamin Spock | USA | The Common Sense of Book of Baby and Child Case |
| 1947 | Thor Heyerdahl | Norway | Theory of Migration (History) |
| 1948 | Alfred Kinsley | USA | Sexual Behavior in Human Male |
| 1958 | John Kaneth Galbraith | USA | The Affluent Society |
| 1960 | Jane Goodall | British | Chimpanzee Behavior Study |
| 1962 | Rachel Carron | USA | Silent Spring |
| 1969 | Elisabeth Kubler | Switzerland | On Death and Dying |
| 1974 | Arthur Laffer | USA | Supply Side Economics |
| 1980 | Luis & Walter Alvarez | | Theory of the Wiping out of Dinosaurs |
| 1988 | Stephen Hawking | Britain | A Brief History of Time |

Table: VIII
Inventions and Discoveries in 20th Century

| Year | Country/ Region | Invention / Discovery |
|-------------|------------------------|---|
| 1900 | Europe | Interpretation of Dreams |
| 1900 | Germany | Quantum Theory |
| 1901 | Australia | Types of Blood & Rh factor |
| 1902 | Scotland | Polygraph Machine (Lie detector) |
| 1903 | Europe | Radio activity & Radium |
| 1903 | USA | Aero Plane |
| 1905 | France | Intelligence Testing System |
| 1905 | Germany | 3rd Law of Thermodynamics |
| 1906 | Britain | Vitamins |
| 1906 | Germany | Intellectual Functioning System |
| 1907 | Italy | Pre school System |
| 1907 | USA | First True Plastic |
| 1908 | USA | Audibility of Reactor Radiation |
| 1910 | Germany | Combating Syphilis |
| 1910 | USA | Chromosomes for Genetic Traits |
| 1910 | USA | Linking Mathematics with Logic |
| 1911 | USA | Structure of Atom |
| 1911 | USA | Detection of Cosmic Rays |
| 1912 | Germany | Theory of Continental Drift |
| 1912 | Britain | Finding Fossilized Remains of a Human Like Creature |
| 1913 | France | Hospital for Treatment of Leprosy |
| 1915 | Germany / USA | Theory of Relativity |
| 1917 | USA | World Largest Telescope |
| 1918 | USA | Size and Structure of Milky Way |
| 1919 | Britain | Artificial Splits an Atom |
| 1921 | Switzerland | Inkpot Test |
| 1921 | Canada | Insulin |

| | | |
|---------|-------------------|---|
| 1922 | Britain | Opened a tomb of Pharaoh who Died in 1325 BC |
| 1924 | France | Theory of Electron Microscope |
| 1926 | USA | First Successful Launch of Liquid Fitted Rocket |
| 1927 | USA | Uncertainty Principle |
| 1927 | Belgium | Big Bang Theory and Cosmic Egg |
| 1928 | Scotland | Penicillin |
| 1928 | USA | Screening Test for Cervical |
| 1928 | Europe | Insulation of Vitamin C |
| 1929 | USA | Evidence that the Universe is Expanding |
| 1930 | USA | Discovery of Pluto (9th Planet) |
| 1930 | Austria | Existence of Neutrons |
| 1933-35 | Britain & Germany | Radar |
| 1934 | France | Artificial Introducing Radioactivity |
| 1935 | USA | Scale to Measure the Strengths of Earthquakes |
| 1938 | Britain | Green-house Effect (by Temperature Study) |
| 1939 | Germany | First Flight by a Jet Aircraft |
| 1939 | Switzerland | DDT as Powerful Insecticide |
| 1940 | USA | Method for Long Term Storage of Blood Plasma |
| 1941 | USA | Ideas for Dispersing Liquids and Powders in a Spray |
| 1942 | Italy | First Nuclear Chain Reaction |
| 1942 | France | Underwater Breathing Apparatus |
| 1942 | Germany | Surface to surface Missile |
| 1943 | Britain | Electronic Computer to Crack German Codes |
| 1943 | Germany | Dialysis Machine |
| 1943 | Switzerland | Drug's Hallucinogenic Effects |
| 1944 | USA | High Yield Grains |
| 1945 | USA | Jet Streams System |
| 1945 | USA | Fluoride water supply to reduce Tooth Decay |
| 1946 | USA | Microwave Cooking |
| 1946 | USA | First Finally Electronic Computer |
| 1947 | USA | Finding Dead Sea Scrolls |
| 1947 | USA | Polaroid Camera |
| 1947 | USA | Breaking the Sound Barrier |
| 1947 | USA | Transistor |
| 1947 | USA | Radiocarbon Dating to determine the Age |
| 1948 | USA | Data gathering Project on UFO Sightings |
| 1952 | Britain | Amniocentesis test for Genetic Abnormalities |
| 1952 | USA | First Effective Radio Vaccine |
| 1952 | Britain | X-Ray Photographs of DNA to show Molecular Structure |
| 1952 | USA | 1st Sex Change Operation |
| 1953 | USA | Deciphered the DNA Structure |
| 1954 | USA | Birth Control Pills |
| 1956 | USA | Explosion of Hydrogen Bomb |
| 1957 | Germany & Britain | Thalidomide - A Sleeping Pill |
| 1957 | USSR | 1st Artificial Satellite into Orbit |
| 1958 | USA | First Implanted Cardiac Pacemaker |
| 1959 | USA | Finding of Fossilized Skull of Human Ancestor who Lived 1.8 million years ago |
| 1959 | USA | Microchip |
| 1959 | USA | Artificial Intelligence Lab |
| 1960 | USA | Descends the Deepest Spot in Oceans |
| 1960 | USA | Working Laser |
| 1963 | USA | The Tranquilizer Valium |
| 1964 | USA | 1st Time Smoking Hazards Warned |

| | | |
|------|---------------|---|
| 1964 | USA | Ist Successful Coronary - Artery By pass Operation |
| 1965 | USA | Discovery of Cosmic Background Radiation |
| 1967 | S. Africa | Ist Successful Human Heart Transplant |
| 1969 | USA | Walk on Moon |
| 1970 | USA | Vitamin C as Cure for Everything from Cancer to the Common Cold |
| 1971 | Britain | CAT- SCAN (3D Image of the Brain) |
| 1972 | USA | Ban on DDT because of Environmental Effects |
| 1974 | USA | Finding of a 3.2 Million Year Old Skeleton |
| 1975 | USA | Discovery of Endogenous Morphine in the Brain |
| 1976 | USA | Ist Supersonics Command airplane in Service |
| 1977 | USA | Identification of new Bacterial Disease Transmitted by Ticks |
| 1977 | USA | Deep Sea Vanity are Found |
| 1977 | USA | Use of Balloon Angiographies |
| 1978 | Britain | Ist Test-Tube Baby |
| 1978 | USA | Bans Chlorofluorocarbon to Protect Earth's Ozone Layer |
| 1988 | WHO | Eradication of Smallpox |
| 1981 | USA | Mongrel of USA Space Shuttle |
| 1981 | USA | Discovery of Earlier Signs of the AIDS |
| 1982 | USA | Approval of Ist Genetically Engineered Drug |
| 1982 | USA | Replace of Heart by Mechanical One |
| 1984 | Britain | Genetic Fingerprinting |
| 1985 | USA/ France | The Genetic Sequence of the AID Virus |
| 1985 | France | Finding of Titanic |
| 1988 | USA | Ist Patent for Genetically Engineered Animal |
| 1990 | USA & Britain | Formal Start of the Human Genome Project- |
| 1990 | USA | Launch of the Hubble Space Telescope |
| 1990 | USA | Proof of Formats' Last Theorem |
| 1993 | USA | Clone Human Embryos |
| 1994 | France | 300,000 Years Old Paintings Discovered |
| 1996 | Scotland | Cloning a Sheep- Dolly |
| 1997 | USA | Roaming the Surface Mars & Sending the Picture back to Earth |
| 1998 | USA | Sale of Viagra |

Table: IX
Benchmarks in Academic Development

| Year | Major Development |
|-------------|---|
| 1100 | Foundation of the University of Paris, France |
| 1100 | Foundation of the University of Oxford, Britain |
| 1457 | Printing of first moveable book, Europe |
| 1636 | Foundation of the University of Harvard, USA |
| 1687 | Newton's Laws of Motion, Britain |
| 1859 | Darwin Theory of Origin of Species, Britain |
| 1867 | Das Capital, by Karl Marx, Germany |
| 1905 | Einstein Theory of Relativity, Germany/ USA/ Israel |
| 1905 | Intelligence Testing System, France |
| 1906 | Intellectual Functioning System, Germany |
| 1907 | Pre-School System, Italy |
| 1910 | Linking Mathematics with Logic, USA |
| 1936 | General Theory of Employment by Keynes, Britain |
| 1958 | The Affluent Society by Galbraith, USA |
| 1988 | A Brief History of Time by Hawking, Britain |

Table: X
Milestones in Health & Medical Sciences

| Year | Discovery/ Event | Discoverer/ Instigator |
|-------------|---|--------------------------------|
| 1628 | Circulation of the blood | William Harvey |
| 1796 | Vaccination | Edward Jenner |
| 1846 | Anesthetics | William Morton |
| 1862 | Germ theory of disease | Louis Pasteur |
| 1897 | Aspirin | Felix Hoffmann |
| 1901 | Types of Bloods | Karl Landsteiner |
| 1906 | Vitamins | Fredrick Hopkins |
| 1913 | Hospital for Leprosy Treatment | Albert Scheitzer |
| 1921 | Insulin | Fredrick Baintry/ Charles Best |
| 1928 | Penicillin | Alexander Fleming |
| 1928 | Screening Test for Cervical/ Uterine Cancer | George Papani-Colaou |
| 1939 | Antibiotics | Howard Florey/ Ernst Chain |
| 1943 | Dialysis Machine | W. Kolf |
| 1952 | Polio Vaccine | J. Salk |
| 1953 | Structure of DNA | James Watson/ Francis Crick |
| 1964 | 1 st By Pass Operation | Debakey |
| 1967 | Heart transplantation | Christian Barnard |
| 1971 | CAT-Scan | Hounsfield |
| 1977 | Extermination of Smallpox | WHO |
| 1977 | Angiography's | USA |

III: State of the Muslim World

A) Is there any Muslim World?

In the multi polar world the concept of Muslim economies is being identified. Is there any Muslim World? In general, Muslim World is considered as the biggest component of the Third World. However, it is some thing more than the sub set of the Third Word (Aga Khan Foundation: 2002). In the second half of twentieth century, more than 30 Muslim countries have come into existence and now world map has more than 55 Muslim countries. The fall of Soviet Union brought also a group of Central Asian states out onto the international stage as the independent countries of Kazakhstan, Turkmenistan, Uzbekistan, Azerbaijan, Tajikistan, and Kyrgyz, with all except Kazakhstan having clear Muslim majorities in their populations.

To define a "Muslim world" is not obvious. There are said to be more than one billion Muslims in the world at the present time. According to the Encyclopedia Britannica, 637 million Muslims live in Asia (excluding former USSR), 278 million in Africa, about 13 million in Europe, 3 million in North America, one million in Latin America and more than 39 million in former USSR. Some of these numbers are suspiciously precise and some are disputed (e.g., the U.S. Muslim community claims 6 million in the U.S. alone). With the North American population the Muslims in Europe remind us that the "Muslim world" is more than a subset of the developing world.

A large part of the world's Muslim population lives in countries where Muslims are not in the majority. Muslims are big minorities in China, India, United States, Canada and Britain, and those minorities cover thirty-three percent of the world's Muslim population. But there is a natural disposition, despite the huge Muslim minorities, to think of the Muslim majority states as making up the "Muslim World". Some of these countries, like Pakistan, Mauritania, and Iran, are officially "Islamic Republics"; though Bangladesh is a "Peoples' Republic",

Indonesia is simply a "Republic"; Saudi Arabia is a "Kingdom" and Qatar flatly the "State of Qatar". Some countries with predominately Muslim populations like Turkey or Iraq have had clearly or even aggressively secular governments and ideologies (AKU: 2002).

More than one-third countries in the world belong to Muslim World. Muslim countries represent 20 percent population and 23 percent surface area of the world. It is a visible indicator of the importance of Muslim world.

Despite its 20 percent contribution in world population and 23 percent in world surface area, the share of Muslim world is less than 5 percent in 'World Domestic Product' and less than 8 percent in global trade. It is surprising that alone India's GDP - in term of the purchasing power parity - is more than the aggregate GDP of entire Muslim world (World Bank: 2000).

The share of Muslim countries in World GDP does not match with their population. It is a source of the low per capita income in Muslim countries. It is noteworthy that share of the Muslim countries in World GDP is sharply declining. It has reached at 4.5 percent in 2003 from 7.5 percent in 1980. It is considerable that GDP is not a stock concept; it is a flow of resources during a year. A sharp decline in the flow of resources implies the reduction in the wealth stock in future. It indicates also the deficiency in the availability of funds for development.

Despite of the resource-based trading, - oil, cotton, textile and other primary goods from Kuwait, Saudi Arabia, Iran, Pakistan, Egypt, Turkey, Bangladesh, Indonesia, and Malaysia - Muslim Economies cannot get even 10 percent share in the global trade activities. The Balance of Payments of the Muslim World has been showing adverse signs for the last several years. The aggregate trade deficit for Muslim countries was 155 billion dollars from 1994 to 1998. It means Muslim World transferred 155 billion dollars of capital resources to other countries. In addition, twenty-six percent of the world debts are payable by the Muslim countries. The poverty in Muslims is rapidly increasing. At present 1.2 billion Muslims are living on the earth. Out of those 650 millions are living at below the poverty line.

More than 42,000 companies are listed in the world stock exchanges, less than 4000 belong to Muslim World. Majority of the listed companies in Muslim World represents the small and medium enterprises (SMEs) and family ownerships. Those small and medium entities among the gigantic Multinational Corporations (MNCs) cannot develop the path of research and development (R & D), economic domination or accelerated growth. Those companies do not have sufficient resources to invest in the new ventures and research activities; while, the investment in knowledge-based technologies and sophisticated research is necessary for accelerated economic development.

Table V shows some statistics for the Muslim World contribution in the research and development (R & D) activities. Only two percent of the scientists and one percent of the technicians involved in research activities belong to Muslim countries. Muslim world' share in the new innovations and inventions in terms of patents registration record and the expenditures on R & D is less than one percent.

B: State of the Higher Education in Muslim World:

Table VI to X show the history of knowledge-based economic development. The journey of knowledge-based economies was started during the seventeenth century – known as age of industrial revolution and mass production. Newton's laws, Stephen's engine, printing press

and many other inventions and discoveries were contributed during the century. This journey was entered into the age of information in 21st century. It is implied that Muslim World has no contribution at all in the development of modern society.

One cannot ignore the services of Western world in the improvement of the quality of human life. West served the humanity by its great contribution in the education and health services. Now, since a long time, Harvard leads the ranking of 500 universities. Of the world's top 20 universities, all but three - Cambridge, Oxford and Tokyo - are in the United States (5 in California state). This ranking was based on several measures of research performance, and academic quality, including academic citations, assessed by the Shanghai Jiao Tong University. The Economist (1999) appraised the services of West in health sector by pointing out that "The Bible promised 70 years of life, but it was surely God's will that most adults in fact had 30 or 40. And when three or four infants died in every ten, who could imagine that the figure would one day be six or seven per 1000".

Although, Islam created several societies – in Iraq, Spain, Iran and Central Asia – where sciences were promoted during the five centuries, from 700 to 1200 AD. This period of anti scientific attitudes in Europe is classified as dark ages, "When in Van Winkle's own continent, Christianity was dominant, but the liveliest culture was Muslim. Europe was yet to acquire from Arabs the basics of public hygiene and health, the navigators' instruments that would one day take its galleons to the ends of earth, the very zero and notation that would enable its scientists to calculate; even much of its own Greek past" (The Economist: 1999). However, it is unfortunate that no mentionable contribution by the Muslim scholars, scientists, or academicians was observed during the last five centuries. Today, no one looks to the Muslim world for breakthroughs in scientific research, and for good reasons. According to the Chronicle (2004), the 21 countries that make up the Arab region are struggling to teach basic science at the university level. For poor countries such as Yemen and Sudan, the problem is a lack of money and resources. For wealthier ones, such as Kuwait and Saudi Arabia, complacency and a relatively new and underdeveloped university system have hampered progress. The lack of significant private industry throughout the region also means that universities are essentially dependent on government to provide jobs for their graduates. The only opportunity after graduation for science majors is teaching in schools, and that is not the best thing a young person would look for as a career. The textbooks are almost a decade old.

Table: XI
Top Universities

| Rank | University | Country |
|-------------|---------------------------------------|----------------|
| 1 | Harvard University | USA |
| 2 | Stanford University | USA |
| 3 | University of Cambridge | Britain |
| 4 | University of California at Berkeley | USA |
| 5 | Massachusetts Institute of Technology | USA |
| 6 | Georgia Institute of Technology | USA |
| 7 | Princeton University | USA |
| 8 | University of Oxford | Britain |
| 9 | Columbia University | USA |

| | | |
|----|---|-------|
| 10 | University of Chicago | USA |
| 11 | Yale University | USA |
| 12 | Cornell University | USA |
| 13 | University of California at San Diego | USA |
| 14 | Tokyo University | Japan |
| 15 | University of Pennsylvania | USA |
| 16 | University of California at Los Angeles | USA |
| 17 | University of California at San Francisco | USA |
| 18 | University of Wisconsin Madison | USA |
| 19 | University of Michigan Ann Arbor | USA |
| 20 | University of Washington Seattle | USA |

Most of the recurring budgets of the universities go towards salaries and stipends, while the major part of development budget is spent for the construction of buildings and purchase of vehicles. The stipend to the students in Saudi Arabia accounts for 40 percent of the Ministry of Higher Education's annual budget.

The United Nations' Development Program and the Kuwait –based Arab Fund for Social and Economic Development released a study showing how dire the situation is. Among the findings: No Arab country spends more than 0.2 percent of its GDP on scientific research. By contrast, the United States spends more than 10 times that amount. Fewer than one in 20 Arab university students pursue scientific disciplines. There are only 18 computers per 1000 people in the Arab World. The global averages are 78 per 1000. Only 370 industrial patents were issued to people in Arab countries between 1980 and 2000. In South Korea during that same period 16,000 industrial patents were issued. No more than 10,000 books were translated into Arabic over the entire past millennium, equivalent to the number translated into Spanish each year (The Chronicle: 2004). Among Arab leaders there is a belief that science and technology, research and development, is something that only rich countries can do it, and it's a very defeatist attitude (The Chronicle: 2004).

The Arab World cannot produce the research necessary to develop a strong private sector; but without a dynamic private sector there is little money to invest in scientific research. Even at the best institutions in the region, like the Jordan University of Science and Technology, with 16,000 students and 650 faculty members, money for research is pittance. (The Chronicle: 2004). It is strange that the United Arab Emirates announced that it was creating a national research foundation to pump more money into scientific research and help establish research based PhD programs, while the universities in the region were not in a position to offer doctoral level education. The undergraduate institutes in the United States (USA) take 30 years or more to transform into institutions where research is done, while, majority of universities in Muslim World was established without any experience in the research or postgraduate level teaching.

The Harvard Report (The Chronicle: 2004) had studied the state of higher education and research in the arc of countries from Indonesia to East Africa and made severe judgments on the deficiencies they found. There is a lack of accountability. The universities have become ivory towers, and in most countries in the Arab World, people do not touch them. The weaknesses are systematic. In many universities in the rest of the world it takes a whole year to search for a president, but in the Arab world a university president is appointed in one day and sometimes even less. That is part of the overall governance. If these things would change, everything else would change.

There was great faculty in Syria in the 1950s, who had been trained in France. Salaries of professors were elite. Now the teaching loads are high and the salaries are so low that professors have to find outside work to survive. And if one goes into any science lab at the University of Damascus today he will find equipment that has not been updated since the 1960s. The system has failed to connect with students' brains to encourage them to think and use information intelligently. It is dangerous that students are memorizing every word in the science books, and those who get the highest grades are going into the most difficult specializations in the university. Universities in Muslim world serve merely as coaching centers. This is the reason that their graduates cannot add equitable value in the economy. They are not serving as knowledge producing factories. Unfortunately, they are just producing the storywriters, clerks and technicians in all sciences. So, the funds that should have been invested in higher education to bring out 'comprehensive minds' are spent on the training and acquisition of clerical skills.

Pakistan's situation is particularly critical, and some consider the system to be in a virtual state of collapse. Pakistan's history of investment and planning in education began immediately after its independence in 1947 with the consideration of "*such immediate projects (as) the Provision of Senior All-India Polytechnics on the lines of Massachusetts Institute of Technology*". More than half a century later, that "consideration" still has no hope of being implemented. The next major educational policy effort was National Commission on education, 1959. It was a serious attempt to tackle with the problems of university education and still remain extremely relevant. The Education Policies of 1970, 1972, 1979, 1992 and 1998 had their own bags of unrealistic (and ultimately unrealized) targets. However they all shared the belief that by the stroke of a pen, without sound planning and investment, higher education would be taken care. Some exacerbated the situation by recommending that new Universities should be opened when it was obvious that the existing ones were not functioning (The Boston: 2004). The present series of attempts by the Higher Education Commission focuses on the quantitative jump in the number of PhDs in Pakistani universities by offering monetary incentives and assistance. The system does not ensure the quality, output and economic relevancy of those PhDs. This policy is being a cause of academic demotion of non-PhDs – but sound and renowned – researchers and academicians.

Most of the research in Pakistan is geared toward promotion, and it is found that faculty only does it as a requirement to get promoted. While, research is a hard working and time-consuming effort, which has no short cut. The rules and procedures for the promotion, selection and rewarding have been spoiling the academic qualities of the universities on human resource fronts. It is astonishing fact, that on average more than 90 percent faculty members cannot fulfill the basic requirement to become a professor in a university. Despite the fact, the universities in Pakistan are offering M. Phil and PhD programs. Academicians and researchers of those universities do not have any recognition in the research and academic circles. It is a worldwide practice that research professors are selected on the basis of their last five years cumulative-citations. Usually, their publications and citations are based on top 15 journals in their disciplines. It was concluded in a research (Mehtar: 1999) that a full professor affiliated with top universities are placed an average of 1 out of 3 articles in top 4 refereed journals, compared to 1 out of 6 articles for professors at lower ranked universities. It indicates that publications in the top journals by the faculty members are highly correlated with the university ranking. However, in case of Pakistan, some universities have launched their own research journals, to fulfill the publication requirements only. They try to avoid the international referral and citation system. The so-called journals are not classified as research

journals. In fact, they attempt to encourage their faculty and research students by mean of the publication of their articles in the in-house journals. The structure of their editorial boards and the contents of material tell the truth that the publishers do not have any idea about the research journals. Majority of the so-called research journals seem the students' magazines. The published materials in those magazines are not accepted as research/ knowledge contributing articles by any reputable university. Mathematical juggleries and vigorously debates – oral or written- are mere tools of the game of mental luxuries, which are being played in the universities of Muslim World. One cannot find the addition of knowledge in the so-called research works and doctoral dissertations completed in the universities of Muslim World.

The governance and top-level authorities do not have an idea of customs, procedures and norms to measure the quality and standard of higher education. They consider the higher education merely an extension in college level education. They do not realize that 'research' is a basic requirement for serving in a university. Research orientation is the only difference between college and university education.

It is observed that the public sector universities in Muslim world have good physical resources, but they have failed to conduct the useful and economic-oriented research. It is a dishonest judgment that financial and physical resources are main hurdles in the research activities. It has been observed in many cases that huge national funds were wasted in the name of higher education and research.

C) Ultimate Consequences:

In the commentary on second millennium the Economist (1999) claimed that “This has been the millennium of the West; first Europe, later its offshoots too, above all the giant one in North America. It has exported worldwide its soldiers, missionaries and empire-builders, its goods and its technology, its political and business systems, even its principal currency. Like it or not (and much of the world often has not), for the moment the West has triumphed. Nothing proves the triumph will endure. Already one quite small Asian nation, Japan, has made a huge mar on the World economy. Who knows what will happen when China and (surely, one day) India really get moving? Already Christianity, the faith once almost synonymous with Europe, is decaying in its homelands – as its rival, Islam, is not. Electoral democracy, the rule of law, the tolerance of dissent, the belief in individual rights: all of these which now seem characteristic of the West, are quite recent inventions, repeatedly triumphed done in the region that proclaims them; and there is no guarantee (though fair reason to expect) that they will last, there or elsewhere. Still for now the world is one largely shaped by the West”.

The United State is the leader of the Western Bloc, and the carrier of the ideology's banner throughout the world. Christianity has one way of spreading itself: Pope John Paul in a public statement has mentioned that “Christianity triumphed Europe in 1st millennium, America in 2nd millennium and now it will triumph Asia in third millennium”.

Now, the United States is the biggest power, which triumphed many wars, not only in military battlefields but also in the fields of science, technology, economics and politics. It was not a defeat of Islam. It was not a deficiency of Muslim soldiers or generals. It was the deficiency and weakness of Muslim intellectuals, scholars and professors. It was the weakness of the universities in Muslim world.

The Economist's commentary, Pop John Paul statement, and the United States victories are the ultimate consequences of the intellectual development in the western universities (and obviously a long term deterioration in the knowledge creating activities in Muslim world). The institutions of higher education in Muslim world are the basic responsible factor for the backwardness in Muslim world. No Muslim country has power equal to the militancy power of the United States, not because of the shortage of resources in Muslim World; but because of the domination of US thinkers, intellectuals, economists, scientists, scholars, and academicians. The powerful corporate sector of the United States can control all over the world through their exports and marketing strategies; not only because of their high quality products but also because of their researchers in the field of marketing and business management. They can visualize and plan for long-term strategies. The US has a powerful financial sector; not because of inherited wealth and resources, but because of their financial expertise. The professors and financial experts in the United States can utilize all those complicated models, techniques and theories, which even cannot be initially understood in the average universities of Muslim world. Those contemporary theories and models are even not included in the post-graduate level curriculum.

The declining share of resource-based commodities and increased share of knowledge-based products in the world trade indicate the further deterioration in the relative strength of Muslim world. The Muslim World has to transfer its wealth to the west for buying the all knowledge based and even manufactured products. Pharmaceutical and communication products, Electronics, Automobiles, Arms and Immunization, and Chemicals, are included in those products, which are required for survival. Even in the banking, insurance, and financial services, Muslim countries have to depend on the systems and institutions of the Western World. There is no other option. This process will go faster in the age of biotechnology for food and other resources. One can image the conditions, when substitute for cotton and petroleum will be available. It is notable that cotton is a major product of Pakistan, Egypt and Uzbekistan, but Israel has the highest yield in the production of cotton. Textile is a main product of Pakistan but its machinery, accessories and chemicals are imported from industrialized countries. Oil is the major product of Muslim countries, its by-products and exploration is in the hand of western investors.

Most important strategic step is the acquisition of knowledge from West. Which knowledge and technology can be transferred by the west; and if west is ready to transfer all their knowledge and technology without any bias and prejudice, are Muslim scholars and scientists in a position to absorb and utilize this knowledge?

V: Conclusions and Policy Recommendations:

The analysis in section II has confirmed the importance of higher education for sustainable economic development. It implies the necessity for a new reform effort in higher education in Muslim World. However, there must be a strategy of both why reform is needed, and how it might be actually implemented.

It is noteworthy to mention at this stage that it is a common opinion in the Muslim world that Mongols' attacks on the academic and cultural centers of Muslim World in 12th and 13th centuries and many other disastrous incidents were the causes of deterioration of Muslim World. History of development do not accept this justification, Western world has been facing most severe crisis in the human history (Table: XII). It is a matter of good fortunate that Muslim World has never faced such severe crisis.

Table: XII
Major Crises and Disasters in the History of Today's Developed World

- Black Death (1347-49) killed one European in three
- World Influenza Epidemic (1918) killed 25 million persons in world; 500,000 in USA only
- Great Depression in 1930
- Civil War in USA
- Bloody Revolution in Russia
- 1st World War
- Nazi's Takeover
- Japan's attack on China
- 2nd World War
- Killing and Migration of the millions of Jews
- Atom Bomb on Japan
- Cold War (1945-89) between USSR and Western World

One can find at least three missing links in the system of higher education in Muslim World. First missing link can be observed between the strategy for promotion of research culture and the curriculum. The policy for the development of academic research and the system of examinations work in opposite directions. Several modes were adopted to develop and implement the updated curriculums. However, despite of repeated efforts, this objective was not achieved. In most of the cases, the curriculum development committees recommended again and again the outdated books and topics, and even if they recommended contemporary topics, the methods of delivery and knowledge transformation does not create the research orientation in the university graduates. The system emphasizes the memorization of texts and mechanical use of the concepts and formulas. This problem was created because of the stereotype lectures and the extensive use of the study guides and short notes.

In the efforts to develop the research culture in universities, the regulating bodies in Pakistan, Turkey and Malaysia have been emphasizing on the use of peer-reviewed journals – certain number of journals with certain cumulative impact factors is recommended. Those efforts are not reflected in the curriculum and teaching approaches in the universities. To check the use of peer reviewed journals, development of creativity, and level of teaching, the subject wise curriculum and the examination papers, must be contemplated by the regulating bodies and foreign experts. It is astonishing fact that undergraduate (and even sometime high school) level standards and norms are adopted at the postgraduate level examinations in the universities. In development of the curriculum, the regulating bodies will have to ensure that the job of curriculum development must be performed by those experts who must have concerned qualification, sufficient knowledge of current issues and verifiable professional or research experience. To achieve the target of high caliber research and delivery of higher education in its real sense, the regulating agencies and governing bodies of the universities will have to strictly follow the international norms and standards in the selection and promotion of faculties and have to stop the nepotism, political influences and lobbying in the administrative affairs of universities.

The second missing link is the disconnection of doctoral degrees with knowledge creation. The system checks only the ritual requirements. It cannot verify the objectivity, originality and acceptability of research work. Such degrees will increase only the number of PhD

degree holders only. They cannot create knowledge for economic development. A fairly large number of PhDs have been working at the senior level positions in the Universities in Muslim World, who did not produce even a single research paper in their entire academic life. They succeeded to get a PhD degree by completing the ritual requirements. To check the quality and standard of a dissertation and to assess the abilities of a doctoral degree holder, the certain number of publications with certain magnitude of impact factor must be determined. It is the only criterion, which has lesser chances to cheat the system. It may be applied simultaneously and uniformly for all local and foreign, private and public sectors, new and old PhDs and it will provide an unbiased and uniform benchmark. The application of this criterion for selections, promotions and retentions of the faculty will provide unbiased and transparent results. It will also be helpful in the screening out of non-genuine researchers and degree holders.

Third missing link is between the academic research and economic development. It is unfortunate that on the name of economic and industrial requirement, universities are delivering the clerical and mechanical skills. They are stepping down to a level of vocational institutes. The universities must feel the difference between the higher education for industrial and economic development and vocational education for industrial requirements. To develop the meaningful relations with the industry and to accelerate the economic growth, university faculties should not deliver the stereotype lectures from out dated books. To develop the economy, universities will have to give extreme importance to research activities. To achieve the target of high-caliber research, they have to create the research-based learning environment in the academia. They will have to find the new technologies to achieve success on economic and business fronts, to develop organizational structures, to maximize profit, and to minimize risks. They will have to create new ideas; they will have to formulate new theories and procedures. All of those are the parts and elements of the knowledge creating activities.

The major responsibility of the universities is to create knowledge. Communication of knowledge is the secondary responsibility for universities, although it is the only responsibility for schools and colleges. High caliber research, innovations and creative activities are inseparable part of the university education. If institutes and universities are not doing this, they should be given a status of affiliated colleges, not chartered universities. The large number of universities will not add any positive competition or output. They will create problems in education sector by unhealthy competition, shortage of funding, commercialization, and compromising quality. Competition is a healthy sign but excess competition creates severe problems in the academic institutions. Distribution of students among the large number of institutions can create shortage of funds available for development and research in those genuine universities where heavy capitals were invested.

Lack of resources, industry's willingness and the governments' determination were not confirmed as the causes of deterioration in the higher education in Muslim countries. The universities and their professors are considered as symbol of dignity. They enjoy a high respect and honor in the society. Government, bureaucracy, armed forces, feudal lords, and politicians do not disregard the universities' teachers; nobody criticize (or even challenge) their role, contribution and capabilities. In most of the cases, the universities have good infrastructures, rich physical facilities, central locations, subsidized services, over employments, guaranteed financial flows and sense of recognition. Even some universities in Arab region, Malaysia, Pakistan, Brunei Darussalam and Bangladesh are much better than

average universities in western world – in terms of physical and financial resources. The industry in Muslim countries has always been contributing in the promotion of higher education by granting funds, development of infrastructure, set up of academic institutions, providing scholarships and creation of employment opportunities. By the same time, the industrial sectors have also been complaining for the lack of proper abilities in the university graduates. This complains is not for the non-university qualified professionals e.g. actuaries, chartered accountants, chartered financial analysts and cost and management accountants etc. This clearly indicates a serious flaw in the university-level education. The on going monitoring and evaluation of the knowledge transformation activities is not possible in the semester system where the same professor work as teacher and examiner. The only tool to confirm the level and quality of teaching is the recent contribution by a professor in the knowledge producing activities – publications, inventions, or research supervisions. This tool is generally not applied in the universities in Muslim world. Lack of human resources – proper faculty – is the basic problem in the universities in Muslim world.

It is obvious that problem is systematic and internal. The hypothesis of external conspiracies is not confirmed. Muslim world whatever their institutional disadvantages, have access to one great asset: the technological knowledge accumulated in industrial countries. They should tap this global stock of knowledge. Acquiring knowledge from abroad is the best way to enlarge the knowledge base. Indeed, one of the clearest lessons from Japan and the newly industrializing economies in East Asia is the value of importing - and building on – established technology from abroad.

It is a common observation that faculty and academician in the universities in Muslim world and particularly in Pakistan blame the International Monetary Fund (IMF), the World Bank, and the United States for their underdevelopment and backwardness. Majority of those academicians have failed to produce even a single peace of research article in the scientific journals. They want to be fame through the publications in the newspapers and public magazines, where they can politicize the issues without using the scientific process.

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