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BUSINESS COMPITIVENESS IN MUSLIM WORLD: ROLE OF GOVERNANCE AND HIGHER EDUCATION

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ABSTRACT

The main objective of this study is to compare Muslim countries with the rest of world in terms of the effectiveness and efficiency of the factors of competitiveness. Another objective of this paper is to determine the factors of competitiveness of the nations. The study has also assessed the impacts of improvement in political and corporate governances of the institutions, technological advancement and higher education on the business competitiveness. The World Competitiveness Index constructed by the World Economic Forum and World Banks statistics on aggregate savings and investment were used to estimate the regression parameters. It was hypothesized that Muslim world is significantly different from the rest of world in terms of the effectiveness and efficiency of the factors of competitiveness. The role of innovations and knowledge creating activities in determining of business competitiveness was not found statistically significant in Muslim world; it was highly significant in case of the rest of world. It was concluded that investment and technology readiness affects the competitiveness in Muslim countries in different ways. It was recommended that Muslim countries should improve their governance of the corporate and political institutions and the higher education to achieve the efficiency and higher targets of competitiveness.

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BUSINESS COMPETITIVENESS IN MUSLIM WORLD: ROLE OF GOVERNANCE AND HIGHER EDUCATION

I: Contemporary Global Issues and Muslim World

World economic history had never witnessed such dramatic and rapid changes, which have been being observed at the stage of global economy during the last three decades. The fall of Soviet Union and its division into independent states, changes in the geography and politico-economic systems in the Eastern Europe, the waves of mergers, acquisitions, privatization, liberalization and globalization in the world economies, heavy fluctuations in the world stock markets, increasing number of liquidation and bankruptcy cases in the corporate sector, histrionic increase in global unemployment and level of poverty, growing geo-disparities in economic and technological advancements, mounting rich-poor gaps, formation of the Euro currency zone and other economic unions, origination of the free trade regime and the clearly observable socio-political changes in Muslim World are those phenomena which have been clearly observed during the last three decades.

The division of bipolar world was based on economic and political ideologies; it ignored the religions' and socio-cultural division of mankind. Now, in the multi polar world the concept of Muslim economies is being recognized. Is there any Muslim World? The question is important but has several complications. To investigate the existence of Muslim World, we have to identify the characteristics, which can categorize Muslim world as a separate entity.

In general Muslim World is considered as the biggest component of the Third World. However, it seems something more than the sub set of Third 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. With the North American population Muslims in Europe remind that the "Muslim world" is more than a subset of the developing world. 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 the Muslim majority countries, like Pakistan, Mauritania, and Iran, are officially "Islamic Republics"; while Bangladesh is a "Peoples' Republic", Indonesia is simply a "Republic"; Saudi Arabia is a "Kingdom" and Qatar flatly the "State of Qatar". Turkey, Iraq, Egypt, Malaysia, and Indonesia have secular governments and ideologies. 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. Now, more than one-third countries in the world belong to the Muslim World. Muslim countries represent 22 percent population and 23 percent surface area of

the world. It is a visible indicator of the importance of Muslim world. Despite its 22 percent contribution in world population and 23 percent in world surface area, the share of Muslim world is about 5 percent in 'World Domestic Product' and less than 10 percent in global trade. 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. In the present inclination of globalization, economic and technological advancements have directly linked with the development of corporate sector. However, the majority of listed companies in Muslim World represent the small and medium enterprises (SMEs) and family ownerships. Those small and medium entities among the gigantic Multinational Corporations (MNCs) cannot develop a path for research and development (R & D) or 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: I to II show some statistics of Muslim World contribution in economic, finance and research activities. Only two percent of the scientists and one percent of the technicians involved in research activities are belonged 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.

All those characteristics show the importance of a causal and analytical study to identify the factors for the clearly visible underdevelopment of Muslim countries. Several hypotheses may be tested to explain the causes of worsening of Muslim world. At the time of larger role of the private sector in the world economies, the achievement in business competitiveness has become one of the major strategic measures in the economic policies. The study of business competitiveness cannot be isolated with technological advancement, corporate structures and political governance. Our study is mainly concerned with these determinants of business competitiveness in Muslim countries.

II: Importance and Objective of the Study

The main objective of this study is to compare Muslim countries with the rest of world in terms of the effectiveness and efficiency of the factors of competitiveness. Another objective of this paper is to determine the factors of competitiveness of the nations. The impacts of the improvement in political and corporate governances of the institutions, technological advancement and higher education on the business competitiveness are also assessed in this study. Such a study will develop a causal relation between the factors of financial resources, corporate and political governances and business competitiveness. It will bridge the gap between the economic planning and business strategies.

The study is important in the present inclination of globalization, because it can provide a path of reconciliation between the post communisms cultural-based blocs in the world. At first stage we compare the Muslim world with the rest of world in terms of the factors of competitiveness (Table: III). This comparison is based on the magnitudes of means and standard deviations of the variables. We developed also a model to establish and quantify

the linkages between the financial resources, technological advancement, business sophistication and competitiveness. In this study we have several underlying hypothesis. The detailed analysis and discussion on the factors of competitiveness and knowledge creation are the integral part of this study. Figure: I summarize the causal relations to explain the study.

Figure: I
Links Between Corporate & Political Governances, Higher Education and Business Competitiveness
(Simultaneity in the Model)

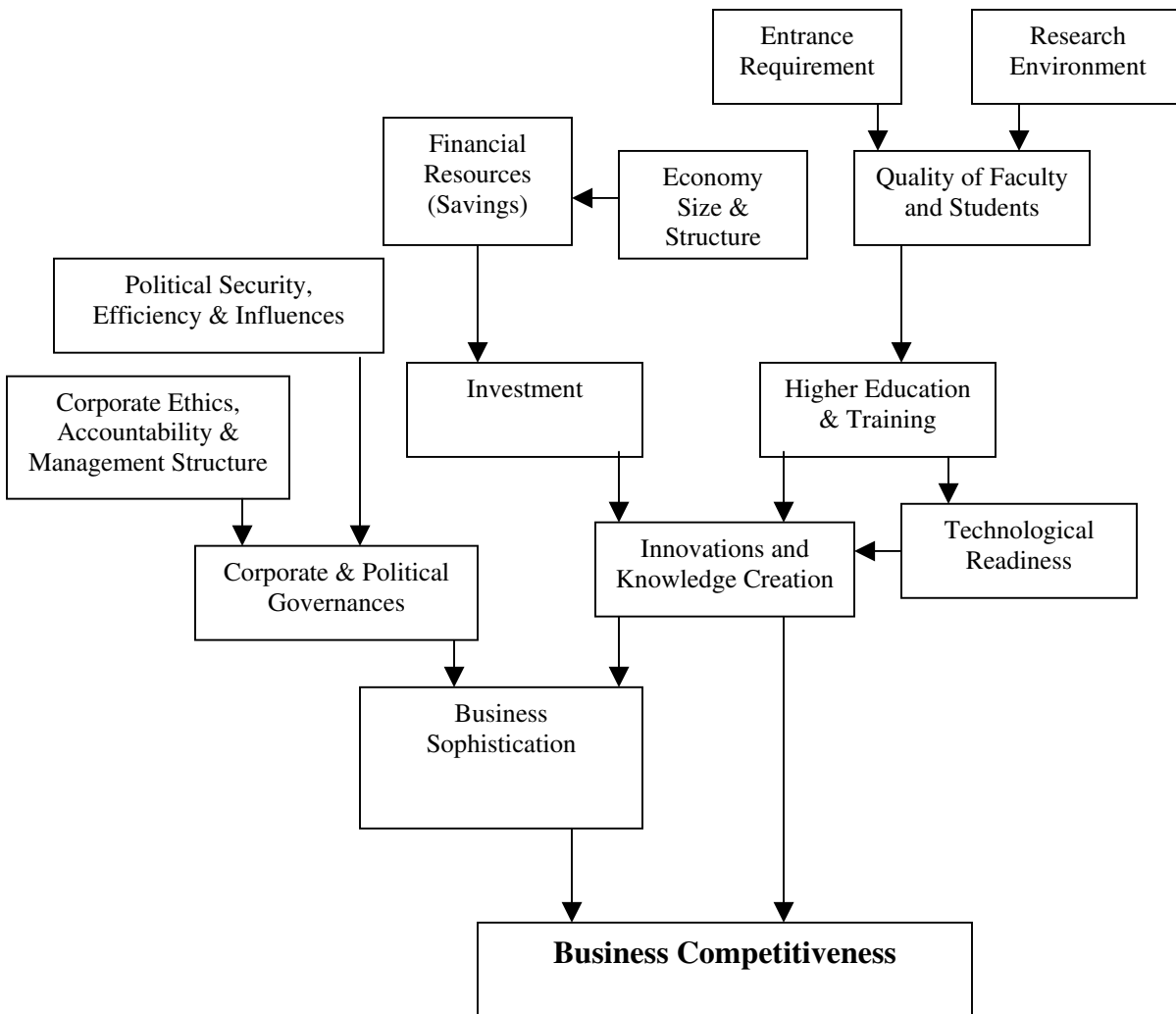


Table: I
Comparison of Economic Status: 2005-06

Group/ Zone	Surface Area (000 KMs)	Population (Millions)	GDP at Equivalent Purchasing Power (Billion \$)	GDP at Nominal Prices (Billion \$)	Per Capita Income (\$)	Merchandise Exports (\$ Billions)	Merchandise Imports (\$ Billions)
Euro 11	2375	317	9984	10875	34307	3113	3018
USA	9632	299	12417	13163	44710	904	1732
Japan	378	128	4534	4368	38630	595	515
Muslim World	30251	1,435	2394	5813	4051	1003	740
World (Total)	133567	6,538	44645	48461	7412	10434	10685
Muslim Countries share as % of Total world	22.6	21.9	5.3	12.0	--	9.6	6.9

Table: II
Science and Technology: 2005-06

Group	Researchers in R & D (Per million people)	Technicians in R & D (Per million people)	Expenditures on R & D (\$ millions)	Exports of Hi-Tech (\$ Million)	Royalties Received (\$ Million)	Royalties Paid (\$ Million)	Patent applications Filed by:	
							Residents	Non-Residents
Muslim	4129	714	6527	66905	482	3239	3147	6638
Non Muslim	108811	27326	1011389	1351604	134796	145279	912451	546529
World (Total)	112940	28040	1017916	1418509	135278	148518	915598	553167
Muslim Countries share as % of total world	3.6	2.5	0.6	4.7	0.35	2.1	0.3	1.1

III: Specification of the Equations

We hypothesized that Muslim world is significantly different from the rest of world in terms of the effectiveness and efficiency of the factors of competitiveness. Table: III presents the descriptive statistics to explain the variation between the two worlds. Figure: II gives brief explanation of variables, while econometric model is presented in figure: III.

One of the objectives of this study is to establish the causal relations between the variables. Our closing equation in the model explains the 'Competitiveness'. We hypothesized that 'Business Competitiveness (BCOM)' depends on the business sophistication (BSUF) and innovation (INOV). While, business sophistication (BSUF) depends on the governance of the political and corporate institutions (INST) and the innovations (INOV) in the economy. We hypothesized that innovation activities (INOV) are an effect of the quantity and quality of higher education (HEDU), volume of investment (INVS) and technological readiness (TECH), while volume of investment (INVS) depends on the aggregate savings (SAVG). The higher education index (HEDU) is composed of several variables. These variables are further classified into three categories: quality of education, quantity of education and on job training. It is commonly observed that quality of higher education induces the quantity and creates a path for the continuous training programs. Those training programs may be organized in the form of workshops, seminars, symposiums, and other continuing learning activities. The basic ingredient of the sustainable higher education system is the quality of faculty and students. The quality of faculty in higher education is measured through their research output. The measurement of research output is a complex and complicated task; number of research publications, citations, impact factors, number of patents acquired by the faculty, number of research projects assigned to the faculty, and various types of collaborative programs are the indicators to measure the research output and quality of the faculty in universities. The quality of students depends on the entrance criteria; recognized and standardized testing services for admission, year of schooling before entry, quality of schooling, integrity and competency of the panelists and interviewers for the admission, prior experience and publications are the criteria to measure the quality of students. To simplify the model at this stage we applied World Economic Forum (WEF) higher education index (HEDU) as determinant of the innovation index (INOV). The composition of higher education index covers most of the ingredient of the higher education.

The governance of political and corporate institutions is a complicated index covers six components: Property rights, ethics and level of corruption in the economy, undue influences, government efficiency, various kinds of security, corporate ethics, and accountability.

To determine the investment we introduced aggregate savings as a proxy of the available financial resources (SAVG) to determine the volume of investment in an economy (INVS).

Aggregate Savings (SAVG), indexes of the Higher education (HEDU), Technological Readiness (TECH), and governance of the corporate and political institutions (INST) are the exogenous variables. We tested the impact of investable funds, higher education, institutional governance and technological readiness on the innovations and business competitiveness through regression analysis. The estimated results are presented in table: IV to VII.

Figure: II
Description of the Variables

Symbol	Variable	Operational Definition/ Factors Covered
BCOM	Business Competitiveness Index	The index is composed of 12 pillars: Institutions, Infrastructure, Macro economy, Health and primary education, Higher education and training, Goods market efficiency, Labor market efficiency, Financial market sophistication, Technological readiness, Market size, Business sophistication, and Innovation.
BSUF	Business Sophistication Index	It covers the corporate governance, marketing strategies, accounting standards, corporate structure and other measures of business sophistication.
HEDU	Higher Education Index	This index was composed on the basis of three elements: Quality of Education, Quantity of Education and Training. Each element was further divided into sub components.
INOV	Innovation Index	The index was composed by spending on R & D, quality of research institutions, university-industry linkages, scientists and engineers in R & D, patents filed and intellectual property rights.
INST	Governance of the Corporate and Political Institutions Index	It covers the role and effectiveness of parliament, legal framework, political honesty, nepotism, fiscal policy objectives, mechanism and procedures of implementations, protection of private property and assets, accounting standards, corporate structures and the role of press & police etc.
INVS	Investment (in million US\$)	'Gross capital formation' consists of outlays on additions to the economy's fixed assets plus net changes in the level of inventories.
SAVG	Savings (in million US \$)	Aggregate savings (a proxy to measure the available financial resources in an economy) are calculated as gross national income less total consumption, plus net transfers.
TECH	Technology Readiness Index	Technological Readiness is defined as composition of the availability of latest technology, absorption and regulating of technology, technology induction through FDI, role of government, research institutions, business community in access and dissemination of information

Figure: III
Specification of Equations

Dependent Variable	Independent Variable	Priority Signs
Aggregate Investment (INVS)	Aggregate Saving (SAVG)	+
Innovation Index (INOV)	Higher Education Index (HEDU)	+
	Technology Readiness Index (TECH)	+
	Aggregate Investment (INVS)	+
Business Sophistication Index (BSUF)	Governance of the Political and Corporate Institutions' Index (INST)	+
	Innovation Index (INOV)	+
		+
Business Competitiveness Index (BCOM)	Business Sophistication Index (BSUF)	+
	Innovation Index (INOV)	+

IV: Data and Methodology

The data for the comparison and calculation of Muslim World' share in the global economy has been extracted from the World Development Indicators (World Bank: 2008). World Development Indicators (World Bank: 2008) do not cover Brunei, Comoros, Djibouti, Maldives, and Suriname; the overall comparison would not be affected because of their negligible share in the global economy. This data covers 152 countries; 56 out of those are Muslim majority countries. Muslim world share in global economy, finance and technology indicators (Table: I to II) was calculated on the basis of these 56 countries. Fifty-four out of the fifty-six countries are the members of the Organization of Islamic Countries (OIC), while the other two are Bosnia-Herzegovina and Tanzania. Although, Bosnia-Herzegovina and Tanzania are not OIC members, they have dominated share of Muslim population – about 40 percent in Bosnia-Herzegovina and more than 35 percent in Tanzania (CIA: 2007). The statuses of Chechnya, Kashmir, and Kosovo have not been determined, so data for their economies are not available. The categorization of OIC members and Muslim countries is presented in Appendix: I.

The data for the estimation of descriptive statistics and regression parameters has been extracted from the World Development Indicators (World Bank: 2008), and the Global Competitiveness Report (Porter, Michael E., Xavier Sala-i-Martin and Klaus Schwab: 2007). Global Competitiveness Report of the World Economic Forum covers 131 countries, however, we could not cover those 20 countries where data on saving was not available in the World Development Indicators (World Bank: 2008). Seven out of these 20 countries are OIC members. The data for other 19 OIC member countries are not covered in the World Economic Forum (WEF) survey to calculate the competitiveness indexes. Afghanistan, Brunei, Comoros, Djibouti, Guinea, Guineas-Bissau, Guyana, Iran, Iraq, Lebanon, Maldives, Niger, West Bank & Gaza, Sierra Leone, Somalia, Sudan, Suriname, Turkmenistan and Yemen are included in those countries, which could not be included in

the estimation of regression parameters; so, we have 30 Muslim Countries, 28 of those are the members of OIC while the other two are Bosnia-Herzegovina and Tanzania. However, exclusion of the above-mentioned countries will not affect the quality of statistical results because of the sufficient number of observations in sample to estimate the required parameters. The list of countries is presented in Appendix: II. In brief, this part of analysis covers 111 countries to estimate the descriptive statistics and parameters in the regression analysis; 30 out of those are Muslim countries.

For estimation of the descriptive statistics and regression parameters, we divided the above-mentioned countries in two groups: 30 Muslim and 81 other countries. We estimated the statistical parameters for each group separately. The results are reported in table: III and IV.

The data on the indexes of Business competitiveness (BCOM), Business Sophistication (BSUF), Innovations (INOV), Governance of the Corporate and Political Institutions (INST), Technological readiness (TECH), and Higher Education (HEDU) was extracted from the Global Competitiveness Report (Porter, Michael E., Xavier Sala-i-Martin and Klaus Schwab: 2007). These indexes are constructed on the basis of several indicators. The details of those indicators are briefly mentioned in figure: II. The higher score of an index indicates the higher achievement in the desirable characteristics of a factor. According to WEF methodology, the competitiveness index are composed on the basis of 12 pillars: Institutions, Infrastructure, Macro economy, Health and primary education, Higher education and training (HEDU), Goods market efficiency, Labor market efficiency, Financial market sophistication, Technological readiness (TECH), Market size, Business sophistication, and Innovation (INOV). These 12 pillars are used to construct the 'competitiveness index'.

The WEF competitiveness index is composed of 113 variables, of which 79 come from executive survey carried out annually. The survey completed by 11000 top management business executives. The weight of each component depends on each country's stage of development.

We used the World Development Indicators (World Bank: 2008) data for saving (SAVG) and investment (INVS). We applied savings as indicator of the available financial resources for investment. The definition of variables and data are easily verifiable from the sources.

V: Results and Conclusion

Descriptive statistics show that Non-Muslim countries are 9 times larger than Muslim countries in term of GDP on average, while Muslim world share is less than 4 percent in the aggregate GDP of the countries included in the sample. Share of Muslim countries is less than 6 percent in aggregate saving and investment of the countries in sample. The indexes of governance of the corporate and political institutions, higher education technology readiness, innovations, business sophistication, and business competitiveness are consistently lower in case of Muslim countries.

Another notable phenomenon is that the coefficients of variance (CV) of all the variables included in the analysis are consistently lower for Muslim countries as compared to the other countries. It indicates that Muslim countries have less disparities in their economic, technological and business development standings. They are almost at the equal level as compared to other countries where variations are significantly higher. This finding can be explained with much detailed analysis if 'Rest of the world' category is divided into further categories. Such findings suggest that Muslim world has some different characteristics from the rest of world. The average development level and variances categorize it as a different world.

The results of the regression parameters are presented in table: V to table VII, while table: VIII provides the summary of simulations in alternative scenarios. The economic variables and the primary and secondary determinants of the business competitiveness including business sophistication, innovation, and governance of the institutions, technology readiness and higher education show the big significant variances between Muslim world and the rest of world. Is Muslim world affected by the determinants of competitiveness in different ways? We tested this hypothesis by group wise estimation of regression parameters. The results are based in three alternative methods: (I) aggregate results are derived through 111 countries data; (ii) separate parameters are estimated for 30 Muslim countries, and (iii) for 81 other countries. The separate estimations by the group of Muslim and other countries indicated the validity of the parameters in different institutional and cultural framework. Almost all the parameters are statistically significant and adjusted R-squares associated with the equations confirm the validity of the models. The signs confirm the acceptance (or rejection) of the hypothesis.

Regression results reveal some interesting and important phenomena. First, a significant difference is existed between the magnitudes of parameters associated with the liquidity measure – aggregate savings (SAVG) in determination of the aggregate investment (INVS). The change in investment will be 110 percent of the change in aggregate savings in case of the 'Non-Muslim Economies', while this change in investment would be 95 percent of the change in savings for 'Muslim World'. This variation shows that growth in investment in Muslim countries has lesser association with the growth in savings because of some unspecified reasons. This situation escorts the increasing investment-saving gap, which ultimately leads the fiscal imbalances and lower growth in the economy. Variation between the two world in their institutional frameworks, lower tendency of investment, lack of confidence in the banking system and financial institution, rigidity in policies, money holding for precautions and apprehensions, speculative activities, and transfer of the funds to the rest of worlds from Muslim countries are the possible causes of this variation. Such causes of variation must be investigated to recommend the policy measures for transformation of savings into investment.

The role of innovations and knowledge creating activities in determination of business competitiveness was not statistically significant in Muslim world; it is highly significant in case of the rest of world. Again, this is an indicator of the variation between the two worlds in their institutional mechanism and framework. To improve competitiveness, Muslim

countries have to develop the significant linkages between the business entities and the researchers. This link is a weaker area of Muslim countries.

Higher education and training, technology readiness, and the magnitude of investment are the significant and major determinants of the innovations and creativity. This relation has consistency in both the world. However, in case of Muslim world the lower magnitude of the adjusted R-square shows the insufficiency of the identified reasons. There is a need of a catalyst other than the specified factors of innovations and creativity in Muslim world.

Business sophistication is a significant factor to determine the business competitiveness. The governance of the corporate and political institutions (INST) and innovations and creativity (INOV) are the factors of business sophistication (BSUF). This relation has a clear consistency between the two worlds in the magnitudes of parameters associated with the explanatory variables and statistical significance.

In the results of simulation analysis (table: VIII), we can find that model is good predictor as magnitudes of simulated variables are equal to their actual values. We tested the impact of 100 percent increase in savings – investable funds, 0.30 points increase in the index of the governance of corporate and political institutions (INST), 0.80 points increase in the index of higher education, and 0.80 points increase in the index of technological readiness. It was noted in simulation analysis that a little improvement is possible in competitiveness of Muslim world by 100 percent increase in the investable funds. No significant role of funds' availability was observed in the simulation analysis. It indicates that financial constraint is not a major hurdle to achieve the higher competitiveness in Muslim world. The index of competitiveness may be improved by 0.03 point by improvement in the governance of corporate and political institution by 0.3 points. The index of competitiveness will reach at 3.87 point from 3.74 if the higher education index is improved by 0.80 points. The improvement in technology readiness index can significantly improve the competitiveness index. The competitiveness index would reach at 4.09 points from 3.74 points if the technology readiness index increases by 0.80 points.

It is interesting and notable that a 0.30 points increase in institutional governance, 0.80 points increase in higher education and 0.80 points increase in technology readiness will improve the Muslim world competitiveness by 0.49 points. In consequences of those joint improvements in the governance, higher education and technology readiness, Muslim world will reach at the same position where the rest of world has reached at present.

VI: Policy Recommendations

The most important finding in this study is the insignificant role of investment in determination of the innovation index in case of Muslim world. Investment plays a significant role in determination of the innovation index for rest of the world, but its insignificance in Muslim countries is astonishing. The indexes of higher education and technology readiness are the only specified significant variables for innovation index in Muslim world, while improvements in the innovation and governance of the corporate and political institutions will ultimately leads the improvement in business sophistication and competitiveness. So, fiscal and monetary policies are not responsible for the less

competitiveness of the Muslim countries, the higher educational policies, governance and institutional development are the major causes of the deterioration of Muslim world.

It was noted that investment is a significant determinant of innovations for the rest of world; it is insignificant in case of Muslim world. Similarly, governance of the institutions is a significant factor to determine the level of business sophistication in the rest of world, which is insignificant in case of Muslim world. Another notable discrepancy is the insignificance of innovation in determination of the level of business competitiveness level in Muslim countries. The innovation is a significant variable for the competitiveness for the rest of world. Those discrepancies indicate the inefficient economic system in the Muslim countries. Before the application of model to improve the level of competitiveness, Muslim countries have to make efficient their economies. The other factors are required for achieving efficiency in the economy. Efficiency requires transparency and instant flow of information. One of the important required measures to make system efficient is the proper linkage between the institutions of higher education, research organizations, and business institutions; a knowledge-based economic growth model is highly recommended to achieve the higher target of competitiveness.

The results of this study quantified the links between the higher education and business competitiveness. However, we have not tested the determinants of the higher education index; it is beyond the scope of this study. The study may be extended to determine the causal factors of higher education. The link between the economic development and higher education is not a new discovery in the economic literature. Various studies concluded a positive correlation between the higher education and economic development. The Boston Group (2004) has concluded that 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. 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). The Harvard report (The International 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. Among Arab leaders there is a belief that science & technology, and research & development, are something that only rich countries can do it, and it's a very defeatist attitude (The International 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. 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.

The dependency of business competitiveness on higher education, innovations and technological advancement may have multi dimensional linkages. A research report, published by the Stanford Economic Department establishes a link between economic history, economic theory, and the application of technology (World Bank: 2004). According to the report, 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 (Mehtar: 2005).

It is important to note that this study is limited to compare the two worlds – Muslim world and the rest of world. It quantifies the impacts of exogenous factors – aggregate savings, higher education, institutional governance and technology readiness – on the business competitiveness and innovations. A further study is suggested to find the causes of disparities between the two worlds in the magnitudes of parameters associated with the independent variables. This causal study may provide further insight of the Muslim world.

Table: III
Descriptive Statistics

Group	Mean	Standard Deviation	Minimum	Maximum	Sum
GDP					
Overall (111 Countries)	414809	1392206	356	13163870	46043819
Muslim World (30 Countries)	60525	98412	511	402710	1815749
Other World (81 Countries)	546026	1611541	356	13163870	44228070
Export of Goods					
Overall (111 Countries)	93885	199760	0	1111969	10421212
Muslim World (30 Countries)	20440	37029	10	160676	613208
Other World (81 Countries)	121086	227155	0	1111969	9808004
Import of Goods					
Overall (111 Countries)	99108	237970	0	1919427	11000980
Muslim World (30 Countries)	19663	34981	255	138290	589894
Other World (81 Countries)	128532	272358	0	1919427	10411086
Aggregate Savings					
Overall (111 Countries)	92076	251464	0	1711303	10220452
Muslim World (30 Countries)	15923	23975	51	94845	477697
Other World (81 Countries)	120281	289411	0	1711303	9742755
Aggregate Investment					
Overall (111 Countries)	94345	288798	68	2501135	10472299
Muslim World (30 Countries)	14661	24086	128	96650	439821
Other World (81 Countries)	123858	333478	68	2501135	10032479
Governance of Corporate and Political Institutions					
Overall (111 Countries)	3.980	0.878	2.410	6.160	
Muslim World (30 Countries)	3.733	0.621	2.560	5.180	
Other World (81 Countries)	4.071	0.943	2.410	6.160	

Higher Education Index					
Overall (111 Countries)	3.921	1.009	2.000	6.010	
Muslim World (30 Countries)	3.261	0.740	2.000	4.860	
Other World (81 Countries)	4.166	0.989	2.160	6.010	
Technology Readiness Index					
Overall (111 Countries)	3.365	1.020	2.100	5.870	
Muslim World (30 Countries)	2.747	0.446	2.130	4.280	
Other World (81 Countries)	3.594	1.078	2.100	5.870	
Business Sophistication Index					
Overall (111 Countries)	4.083	0.788	2.780	5.930	
Muslim World (30 Countries)	3.731	0.525	2.960	5.170	
Other World (81 Countries)	4.214	0.831	2.780	5.930	
Innovation Index					
Overall (111 Countries)	3.373	0.873	2.100	5.770	
Muslim World (30 Countries)	3.034	0.493	2.100	4.500	
Other World (81 Countries)	3.499	0.949	2.110	5.770	
Business Competitiveness Index					
Overall (111 Countries)	4.116	0.697	2.780	5.670	
Muslim World (30 Countries)	3.742	0.486	2.780	5.100	
Other World (81 Countries)	4.255	0.714	2.840	5.670	

Table: IV
Estimated Results (All countries: 111)

Dependent Variable	Independent Variable	Coefficient	T-Statistic	Adjusted R-Square	F-Statistic
INVS	CONS	-7219.996	-0.884	0.9218	1297.14
	SAVG	1.103	36.016		
INOV	CONS	0.738	5.536	0.8532	214.19
	HEDU	0.163	2.002		
	TECH	0.579	7.066		
	INVS	4.87E-07	4.082		
BSUF	CONS	1.094	9.116	0.8816	410.37
	INST	0.130	2.232		
	INOV	0.733	12.546		
BCOM	CONS	0.976	7.968	0.9055	528.07
	BSUF	0.517	6.955		
	INOV	0.305	4.554		

Table: V
Estimated Results (Muslim countries: 30)

Dependent Variable	Independent Variable	Coefficient	T-Statistic	Adjusted R-Square	F-Statistic
INVS	CONS	-434.587	-0.243	0.8865	227.62
	SAVG	0.948	15.087		
INOV	CONS	0.727	1.989	0.6395	18.15
	HEDU	0.210	1.724		
	TECH	0.585	2.861		
	INVS	8.77E-07	0.344		
BSUF	CONS	0.742	2.569	0.7918	56.16
	INST	0.166	1.393		
	INOV	0.781	5.183		
BCOM	CONS	0.620	2.341	0.8331	73.40
	BSUF	0.619	4.021		
	INOV	0.268	1.630		

Table: VI
Estimated Results (Other countries: 81)

Dependent Variable	Independent Variable	Coefficient	T-Statistic	Adjusted R-Square	F-Statistic
INVS	CONS	-9107.676	-0.799	0.9194	913.52
	SAVG	1.105	30.224		
INOV	CONS	0.493	2.819	0.8796	195.80
	HEDU	0.204	1.888		
	TECH	0.583	5.830		
	INVS	5.03E-07	4.264		
BSUF	CONS	1.203	8.699	0.8868	314.38
	INST	0.124	1.855		
	INOV	0.716	10.799		
BCOM	CONS	1.191	8.334	0.9133	422.14
	BSUF	0.440	5.276		
	INOV	0.346	4.737		

**Table: VII
Comparison of Results**

Dependent Variable	Independent Variable	Total	Muslim Work	Other Work
INVS	CONS	-7219.996	-434.587	-9107.676
	SAVG	1.103	0.948	1.105
INOV	CONS	0.738	0.727	0.493
	HEDU	0.163	0.210	0.204
	TECH	0.579	0.585	0.583
	INVS	4.87E-07	8.77E-07	5.03E-07
BSUF	CONS	1.094	0.742	1.203
	INST	0.130	0.166	0.124
	INOV	0.733	0.781	0.716
BCOM	CONS	0.976	0.620	1.191
	BSUF	0.517	0.619	0.440
	INOV	0.305	0.268	0.346

**Table: VIII
Simulation Analysis
Impact of Investment, Governance, Higher Education and Technology on
Competitiveness**

Variable	Simulation in Base Scenario	Increase in Investable Funds by 100 %	Improvement in Governance Index by 0.30 Points	Improvement in Higher Education Index by 0.8 Points	Improvement in Technology Index by 0.8 Points	Improvement in Governance, Higher Education & Technology
Aggregate Investment	14661	29756	14661	14661	14661	14661
Governance	3.73	3.73	4.03	3.73	3.73	4.03
Higher Education	3.26	3.26	3.26	4.06	3.26	4.06
Technology Readiness	2.75	2.75	2.75	2.75	3.55	3.55
Business Sophistication	3.73	3.74	3.78	3.86	4.09	4.28
Innovations	3.03	3.04	3.03	3.20	3.50	3.67
Business Competitiveness	3.74	3.75	3.77	3.87	4.09	4.25

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Muslim World and OIC Membership

A) Muslim countries having membership of OIC (54):

Afghanistan, Albania, Algeria, Azerbaijan, Bahrain, Bangladesh, Benin, Brunei, Burkina Faso, Cameroon, Chad, Comoros, Côte d'Ivoire, Djibouti, Egypt, Gabon, Gambia, Guinea, Guinea-Bissau, Guyana, Indonesia, Iran, Iraq, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Libya, Malaysia, Maldives, Mali, Mauritania, Morocco, Mozambique, Niger, Nigeria, Oman, Pakistan, Palestinian Authority, Qatar, Saudi Arabia, Senegal, Sierra Leone, Somalia, Sudan, Suriname, Syria, Tajikistan, Togo, Tunisia, Turkey, Turkmenistan, Uganda, United Arab Emirates, Uzbekistan, Yemen.

B) Muslim-dominated population countries without membership of OIC (2):

Bosnia and Herzegovina, Tanzania

C) Non-Muslim countries having membership of OIC (3):

Côte d'Ivoire, Gabon, Togo

List of countries in regression analysis

A) Muslim countries included in regression analysis:

Albania; Algeria; Azerbaijan; Bangladesh; Benin; Bosnia and Herzegovina; Burkina Faso; Cameroon; Chad; Egypt; Gambia, The; Indonesia; Jordan; Kazakhstan; Kyrgyz Republic; Malaysia; Mali; Mauritania; Morocco; Mozambique; Nigeria; Pakistan; Senegal; Syria; Tajikistan; Tanzania; Tunisia; Turkey; Uganda; Uzbekistan

B) Non-Muslim countries included in regression analysis:

Argentina; Armenia; Australia; Austria; Belgium; Bolivia; Botswana; Brazil; Bulgaria; Burundi; Cambodia; Canada; Chile; China; Colombia; Costa Rica; Croatia; Czech Republic; Denmark; Dominican Republic; Ecuador; El Salvador; Estonia; Ethiopia; Finland; France; Georgia; Germany; Greece; Guatemala; Honduras; Hungary; India; Ireland; Italy; Jamaica; Japan; Kenya; Korea; Latvia; Lesotho; Lithuania; Macedonia, FYR; Madagascar; Mauritius; Mexico; Moldova; Mongolia; Namibia; Nepal; Netherlands; New Zealand; Nicaragua; Norway; Panama; Paraguay; Peru; Philippines; Poland; Portugal; Romania; Russia; Serbia; Slovak Republic; Slovenia; South Africa; Spain; Sri Lanka; Sweden; Switzerland; Thailand; Timor-Lester; Trinidad and Tobago; Ukraine; United Kingdom; United States; Uruguay; Venezuela; Vietnam; Zambia; Zimbabwe

C) Muslim countries not included in regression analysis:

Afghanistan, Brunei, Comoros, Djibouti, Guinea, Guineas-Bissau, Guyana, Iran, Iraq, Lebanon, Maldives, Niger, West Bank & Gaza, Sierra Leone, Somalia, Sudan, Suriname, Turkmenistan; Yemen; Oman; Kuwait; United Arab Emirates; Saudi Arabia; Bahrain; Libya; Qatar

D) Non-Muslim countries not included in regression analysis:

Singapore; Israel; Barbados; Cyprus; Guyana; Hong Kong SAR; Iceland; Luxembourg; Malta; Montenegro; Puerto Rico; Suriname; Taiwan, China

APPENDIX: III**Determinants of Business Competitiveness:
Muslim Countries in the Sample**

Country	Savings (M/US\$)	Investment (M/US\$)	Index of the Institutional Governance	Index of the Higher Education	Index of The Technology Readiness	Index of the Business Sophistication	Index of the Innovation	Index of the Business Competitiveness
Albania	1547	2275	3.14	3.15	3	3.35	2.1	3.48
Algeria	58511	34418	3.88	3.39	2.54	3.26	2.95	3.91
Azerbaijan	9926	6352	3.64	3.51	2.92	3.84	3.36	4.07
Bangladesh	21045	15474	2.87	2.47	2.25	3.41	2.56	3.55
Benin	525	955	3.57	2.84	2.46	3.51	2.97	3.49
Bosnia and Herzegovina	858	1961	3.14	3.26	2.49	3.2	2.53	3.55
Burkina Faso	370	1049	3.76	2.5	2.4	3.44	2.94	3.43
Cameroon	3115	3298	3.1	2.84	2.56	3.29	2.68	3.37
Chad	1504	1439	2.56	2	2.13	2.96	2.28	2.78
Egypt	23646	20422	4.19	3.68	2.84	4.08	3.17	3.96
Gambia, The	51	128	4.28	2.96	2.67	3.69	2.74	3.59
Indonesia	94845	91198	3.9	4	2.99	4.65	3.56	4.24
Jordan	1974	3807	4.77	4.31	3.16	4.18	3.34	4.32
Kazakhstan	25111	26731	3.67	4.11	2.98	3.76	3.1	4.14
Kyrgyz Republic	113	479	2.86	3.57	2.14	3.22	2.53	3.34
Malaysia	48215	31641	5.18	4.86	4.28	5.17	4.5	5.1
Mali	763	1349	3.85	2.6	2.45	3.35	2.98	3.37
Mauritania	772	612	3.77	2.33	2.65	3.43	2.56	3.26
Morocco	22236	20928	4.09	3.63	3.06	3.93	3.25	4.08
Mozambique	205	1298	3.21	2.33	2.29	3	2.56	3.02
Nigeria	39215	25374	3.33	3	2.64	3.98	3.22	3.69
Pakistan	30441	27904	3.66	2.72	2.77	3.85	3.15	3.77
Senegal	1653	2664	3.4	3.11	2.93	3.82	3.1	3.61
Syria	5679	5345	3.99	3.13	2.5	4	2.88	3.91
Tajikistan	337	422	3.6	3.06	2.27	3.18	2.82	3.37
Tanzania	1406	2429	3.97	2.55	2.6	3.61	3.15	3.56
Tunisia	7575	7272	5.16	4.78	3.43	4.61	4.02	4.59
Turkey	68461	96650	4.13	4.05	3.39	4.45	3.36	4.25
Uganda	1413	2166	3.21	2.84	2.69	3.54	3.1	3.33
Uzbekistan	6184	3779	4.1	4.25	2.92	4.17	3.55	4.13

APPENDIX: IV**Determinants of Business Competitiveness:
Other Countries in the Sample**

Country	Savings (M/US\$)	Investment (M/US\$)	Index of the Institutional Governance	Index of the Higher Education	Index of The Technology Readiness	Index of the Business Sophistication	Index of the Innovation	Index of the Business Competitiveness
Argentina	55703	51418	2.99	4.22	2.96	3.97	2.91	3.87
Armenia	1916	2172	3.4	3.35	2.55	3.26	2.87	3.76
Australia	163912	210743	5.66	5.46	5.2	4.81	4.41	5.17
Austria	83720	67620	5.72	5.4	5.17	5.69	4.76	5.23
Belgium	94568	86687	5.06	5.57	4.82	5.44	4.74	5.1
Bolivia	2902	1339	2.97	3.42	2.25	3.05	2.25	3.55
Botswana	5511	2755	4.46	3.49	3.06	3.41	2.85	3.96
Brazil	181470	181470	3.32	4.01	3.35	4.48	3.5	3.99
Bulgaria	5037	10075	3.22	3.99	3.11	3.57	2.96	3.93
Burundi	9	154	3.1	2.16	2.1	2.82	2.29	2.84
Cambodia	1234	1524	3.36	2.58	2.32	3.4	2.69	3.48
Canada	305182	279750	5.26	5.49	5.34	5.12	4.9	5.34
Chile	35002	29169	4.83	4.41	3.89	4.65	3.48	4.77
China	1428128	1190106	3.71	3.77	3	4.18	3.6	4.57
Colombia	30681	36817	3.67	3.88	2.98	4.1	3.11	4.04
Costa Rica	4224	6002	4.17	4.24	3.35	4.5	3.62	4.11
Croatia	10302	14165	3.86	4.31	3.46	4.11	3.43	4.2
Czech Republic	34324	38615	3.84	4.85	4.12	4.71	3.95	4.58
Denmark	68842	63334	6.14	5.96	5.64	5.6	5.11	5.55
Dominican Republic	5732	6369	3.23	3.24	3.13	3.7	2.67	3.65
Ecuador	11179	9522	2.93	2.92	2.57	3.57	2.56	3.57
El Salvador	2238	2985	3.63	3.42	2.87	3.92	2.66	4.05
Estonia	4103	6236	4.74	5.18	5.07	4.39	3.75	4.74
Ethiopia	1198	2663	3.71	2.55	2.36	3.18	2.61	3.28
Finland	56876	44237	6.16	6.01	5.36	5.46	5.67	5.49
France	427137	472099	5.09	5.38	4.88	5.47	4.69	5.18
Georgia	542	2091	3.62	3.59	2.56	3.14	2.65	3.83
Germany	666281	521438	5.83	5.33	5.05	5.93	5.46	5.51

Greece	49352	80197	4.31	4.44	3.29	4.13	3.23	4.08
Guatemala	4946	6712	3.49	3.17	2.94	4.15	3	3.86
Honduras	2863	3048	3.58	3.3	2.62	3.79	2.75	3.89
Hungary	21455	28230	4.14	4.64	3.91	4.35	3.61	4.35
India	310016	310016	4.32	4.13	3.17	4.81	3.9	4.33
Ireland	52833	59437	5.25	5.26	4.65	5.07	4.54	5.03
Italy	351683	388702	3.77	4.55	4.37	4.91	3.45	4.36
Jamaica	2606	3308	3.61	3.83	3.89	4.04	3.27	3.95
Japan	1179477	1004740	5.06	5.21	5.06	5.76	5.64	5.43
Kenya	2961	4328	3.35	3.56	2.76	4.03	3.47	3.61
Korea	266407	266407	5.05	5.65	5.46	5.47	5.36	5.4
Latvia	3420	7644	4.02	4.82	4.01	4.02	3.08	4.41
Lesotho	403	493	3.15	2.66	2.38	2.9	2.31	3.27
Lithuania	3870	8037	4.08	4.98	4.04	4.43	3.45	4.49
Macedonia, FYR	1368	1306	3.34	3.77	2.77	3.35	2.88	3.73
Madagascar	880	1375	3.44	2.56	2.47	3.41	2.99	3.36
Mauritius	1206	1587	4.44	3.94	3.39	4.19	3.01	4.16
Mexico	184620	184620	3.62	3.83	3.23	4.22	3.11	4.26
Moldova	772	1141	3.3	3.66	2.51	3.12	2.62	3.64
Mongolia	1378	1096	3.09	3.78	2.53	3.03	2.86	3.6
Namibia	2758	1904	4.17	3.05	2.77	3.39	2.66	3.85
Nepal	2503	2324	3.1	2.65	2.41	3.29	2.49	3.38
Netherlands	198689	132459	5.73	5.57	5.65	5.54	4.88	5.4
New Zealand	15678	26130	5.8	5.53	4.82	4.75	4.09	4.98
Nicaragua	689	1537	3.22	3.04	2.32	3.31	2.48	3.45
Norway	123929	73687	5.82	5.6	5.46	5.19	4.6	5.2
Panama	3077	3419	3.85	3.81	3.18	4.27	2.97	4.18
Paraguay	649	1948	2.67	2.87	2.21	3.18	2.11	3.3
Peru	21256	18483	3.28	3.63	2.94	4.11	2.78	3.87
Philippines	38795	16459	3.42	4.02	3.07	4.2	3.03	3.99
Poland	60972	67747	3.65	4.62	3.44	4.04	3.28	4.28
Portugal	23367	42840	4.87	4.62	4.28	4.37	3.71	4.48
Romania	15809	29186	3.44	4.14	3.29	3.99	3.09	3.97
Russia	296082	197388	3.1	4.33	3.03	3.7	3.31	4.19
Serbia	3199	6718	3.37	3.65	3.34	3.53	3.08	3.78

Slovak Republic	11010	15964	3.99	4.42	4.08	4.26	3.42	4.45
Slovenia	9326	10072	4.45	5.08	4.29	4.65	3.75	4.48
South Africa	35722	51031	4.55	4.12	3.57	4.61	3.71	4.42
Spain	269429	379650	4.46	4.75	4.33	4.81	3.58	4.66
Sri Lanka	6741	7820	3.85	3.77	2.84	4.26	3.58	3.99
Sweden	95950	69084	5.86	5.98	5.87	5.7	5.53	5.54
Switzerland	136948	83691	5.9	5.63	5.67	5.8	5.74	5.62
Thailand	63965	57775	4.33	4.38	3.61	4.45	3.62	4.7
Timor-Leste	886	68	2.79	2.39	2.42	2.78	2.17	3.2
Trinidad and Tobago	5804	2902	3.47	3.87	3.11	3.93	3	3.88
Ukraine	24488	25553	3.12	4.2	2.75	3.83	3.22	3.98
United Kingdom	332778	427857	5.31	5.42	5.27	5.41	4.79	5.41
United States	1711303	2501135	4.76	5.68	5.43	5.6	5.77	5.67
Uruguay	2703	3089	4.43	3.99	3.09	3.72	3.01	3.97
Venezuela	72745	45466	2.41	3.61	2.95	3.52	2.79	3.63
Vietnam	22570	21960	3.78	3.39	2.85	3.81	3.22	4.04
Zambia	2469	2576	3.76	2.56	2.52	3.21	2.58	3.29
Zimbabwe	0	581	2.99	3.15	2.26	3.3	2.67	2.88