

Innovation, economic development and the Islamic Religion

Is there a conflict between innovation and Islam?

Is there a connection? A thought provoking article by John Cassidy in the New Yorker magazine¹ raises the question of whether Islam is to blame for lagging economic growth in the Arab world.

This Paper explores this notion further by looking at the presence of innovation drivers in Islamic countries.

1. Overview

Cassidy concludes that ‘day-to-day worship of the sort practiced by hundreds of millions of Muslims (excluding radical Islam) is no more what is holding back the Middle East than Hinduism was what held back India or Roman Catholicism was what held back Ireland. Despite the arguments of new Weberians², people have always found a way to serve their gods and serve Mammon too’.

So, if the practice of religion is not holding back Islamic country’s economic development, what is the problem? Will sufficient innovation, as the main contributor to economic development and job creation, take place in Islamic countries in the near future?

Drivers of innovation need to be present in both a country’s infrastructure and at an individual level. Ideas, in the first instance come from people but the nation’s infrastructure can either facilitate innovation or act to constrain development. Innovation drivers such as ‘tinkering’, flexible financial structures, a materialistic consumer, and a tolerance for failure are found in nations which have a tradition of innovation such as the U.S.A., Sweden and Germany. These same drivers are currently not present in Middle Eastern countries with the exception of Israel. Is the lack of innovation drivers a major part of the explanation of the lack of economic development in many Islamic countries?

This Paper explores which of the drivers of innovation need to be addressed and concludes that:

- At the institutional level, a flexible approach to the creation and destruction of corporate organizations is currently missing in many Islamic countries and is the most important single element in facilitating the means of attracting investment and thereby creating jobs. A reasonably stable regime is required before investment can occur. Is it time for a Marshall plan, an EBRD but for the Middle East, more flexibility with the IFC loan arrangements?
- At the individual level, tinkering is an important element of innovation and stems from curious minds and an effective education system, especially in the science and technology fields. More emphasis on science and technology education is required but the results of this investment will take time – upwards of two decades but it is important to start now.
- Entrepreneurship – the type which has the potential to create enterprises and not single market small businesses - has been so discouraged in many Islamic countries that there has to be a new start. A starting point might well

¹ The New Yorker, February 28th, 2011. Annals of Economics - Profit Motive. The economies of the Arab world lag behind the West. Is Islam to blame? John Cassidy.

² Weber is most famous for the thesis in [economic sociology](#) which he elaborated in his book [The Protestant Ethic and the Spirit of Capitalism](#). In this text, Weber argued that [ascetic Protestantism](#) particular to the [Occident](#) was one of the major "elective affinities" associated with the rise of [capitalism](#), [bureaucracy](#) and the [rational-legal nation-state](#). Courtesy of Wikipedia.

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be the ‘privatization’ of state-owned or military-owned assets in order to create a new drive from the private sector. Incidents such as the self immolation by a young man in Egypt after his vendor stand was shut down provide evidence of highly restrictive regulatory environment not conducive to entrepreneurship. Business education is an important contributor to entrepreneurship.

In short, it is not religious beliefs which are holding back innovation in Islamic countries. It is the lack of a number of drivers, the most important of which is the need for laws and reforms which facilitate the creation – and possible destruction – of organizations which can marshal resources to provide goods and services and thereby create jobs.

The essential policy step for Islamic countries is therefore to ensure that there is a financial infrastructure which facilitates the formation of organizations – both for-profit and for non-profit – to allow for the production of goods and services. Only through the presence of these organizations is there any chance that investment capital will be attracted and the creation of much-needed jobs will take place. Small scale enterprises which could only serve a limited domestic market with no capacity for export markets will not create the needed employment. One irony is that several of the Islamic nations were once part of a trading network – with commercial gain for individuals as the objective.

2. Innovation in selected Islamic Countries

The author of the New Yorker article, John Cassidy, seeks to open a discussion on the link between Islam and economic development and does so by going to the historic and religious ‘truths’ which have impacted development. It is a fascinating read. If Islam is holding back economic development, what is the economic future for many of these countries? Will jobs be available for the vast numbers of young people who so recently have gone to the streets to demand democracy and transparency? Is Islam a major inhibitor of innovation, or not?

There is no doubt that economic growth has lagged in many Islamic countries. The latest report of the World Economic Forum provides a numeric measure of innovation in several Islamic countries. The picture is not pretty, if one is concerned about economic growth, industrial development and more particularly about job creation.

A comparison of innovation in several mainly Islamic countries

Country	Population (Millions) ³	% Muslim population ⁴	Innovative Rank ⁵	Patent Filings (per million pop.) 1995 – 2007 ⁶	Stage of development – see reference 5.
Pakistan	164.6	96.3	75 th	Minimal note	Stage 1
Malaysia	26.2	60.4	24 th	1.61 to 25.24 always increasing	Stage 2
Indonesia	228.1	88.2	36 th	.32 to 9.27 and increasing	From 1 to 2
Middle East					
Iran	71.2	99.4	66 th	Minimal note	From 1 to 2
Saudi Arabia	25.8	97.0	28 th	1.51 to 5.30	From 1 to 2
Egypt	76.9	94.6	83 rd	5 to 9 and flat	From 1 to 2
Tunisia	10.3	99.5	31 st	3.5 to 7 and flat	Stage 2
Turkey	75.2	98.0	67 th	2.75 to 24.50 and increasing	Stage 2
Libya	6.1	96.6	131 st	No report	From 1 to 2

³ The Economist. Pocket World in Figures. 2010 Edition.

⁴ 2009 Pew Report

⁵ World Economic Forum Report 2010-2011: The Global Competitiveness Index: Innovation and sophistication factors. Report on the 12th Pillar of Competitiveness.

⁶ Source: WIPO Statistics Database and World Bank (World Development Indicators), June 2009.

Recent trends, at least in 3 of mostly Muslim-population states, Malaysia, Tunisia, and Turkey, suggest that early inhibitors of entrepreneurship – here taken as a proxy for innovation and economic development – are beginning to be overcome.

The picture by country is dramatically different. Those increasing their performance, at least by the measure of patent filings per million of population are clearly Turkey, Malaysia and Indonesia. Not to compare but rather to simply illustrate differences, the similar ranges for more advanced countries are; Sweden 270 to 475, Canada 80 to 170, Israel 35 to 335, and Iceland 60 to 250. Even Iceland, with its small size, has a noticeable record of patents filed. By this measure, i.e. patent filings, Muslim countries have a distance to go. Malaysia, Tunisia and Turkey are already at Stage 2 and increasing their performance.

On the other hand, it might be that the lesser-developed countries are not as yet plugged into the patent filing and granting regime or, as others might argue, simply not interested in becoming a part of a process of patent protection. The front runners, Malaysia and Turkey appear to recognize the importance of patents and by so doing give credence to the protection of intellectual property, a fundamental part of commercializing innovation. The incidence of larger institutions and organizations is no doubt a contributing reason why these country's patent filing performance is growing. Filing and maintaining patents is expensive.

Oil resource rich countries such as Saudi Arabia, Iran and Libya, have very different economics and are not so dependent upon other sectors for their growth. In addition, in some of the oil-rich countries, Libya and Saudi Arabia for example, it is often ex-pats who explore, operate, and train nationals in the oil industry. In other words, the scientific and technological capability does not reside with nationals.

Timur Kuran⁷, who is referenced in Cassidy's article, provides in an abstract to his paper on entrepreneurship in Islamic countries, background information which is essential to better understanding the issue.

***Abstract.** The historical record belies the claim that Islam per se has impeded entrepreneurship by inculcating conformism and fatalism. By the same token, the diametrically opposed view that Islam offers institutions necessarily supportive of entrepreneurship flies in the face of the historical transformations associated with economic modernization. Islamic institutions that served innovators well in the medieval global economy became dysfunctional as the world made the transition from personal to impersonal exchange. The key problem is that Islamic law failed to stimulate the development of organizational forms conducive to pooling and managing resources on a large scale.*

A somewhat different viewpoint on Kuran's take on economic development is provided by Jack A. Gladstone⁸.

Professor Kuran argues that poor economic performance in Middle Eastern economies is rooted in institutions and legal conditions that hindered the accumulation and efficient investment of private capital. He further argues that these institutions and legal conditions were specific historical developments in the Middle East, and not inherent features of Islamic societies. Thus Islamic societies have the potential for better performance, provided those historical obstacles can be diminished. This much is clear from the examples of Malaysia and Indonesia, and earlier of Lebanon, all of which showed fairly rapid modernization and economic growth for substantial periods.

However, Kuran's view is incomplete. He overlooks problems specific to the Middle East that are not part of Islam, but part of the Ottoman legacy or accidents of geography. These include (1) the system of absolute central authority in politics; (2) tribalism and guilds; (3) disincentives to investment in human capital; and (4) disinclination to seek innovations. It may take revolutions – not of the Islamic variety, nor the military or one-party variety, but truly democratic revolutions – to unleash the economic potential of Middle Eastern societies.

⁷ Timur Kuran, Department of Economics, Duke University. May 2007. The Scale of Entrepreneurship in Middle Eastern Islamic History: Inhibitive Roles of Islamic Institutions.

⁸ Jack A. Goldstone, Hazel Professor of Public Policy, George Mason University, June 24, 2003

Historical legacies, colonialism, religious beliefs are all entangled in the culture of each country. The situation for each country is different.

The 'Innovation Rank', the 12th pillar in The World Economic Forum Report, shows that Malaysia, Indonesia and Tunisia are in the top tier of the group. Innovation, however, needs interpretation as between developed and lesser-developed countries. While it is understood that a country's standards of living can only be enhanced by technical innovation, it is also clear that the challenge is different for advanced as compared to less economically-advanced countries. Frontier knowledge is a must for the advanced countries whereas lesser-developed countries can, as a starting point, rely on adopting existing technologies and making incremental improvements using current knowledge.

The Report also notes that there are sometimes subtle interrelationships⁹ among the various pillars which are measured. Each country's stage of development is different with some stuck at Stage 1, while others are in transition from Stage 1 to 2, and other firmly at Stage 2. Malaysia, Tunisia and Turkey are at Stage 2.

One of the concerns about whether economic development has been held back by Islam has been the restrictions which Islam allegedly places on banking arrangements and the concept of interest as well as other commercial negotiations. Evidently Islamic nations were slow to develop the concept of corporations, commercial courts, as evidence of the codification of Islamic beliefs. The influence of the Koran on inheritance practices also prevented the establishment of long-lasting capitalistic organizations due to the rules respecting inheritance. Cassidy, however, asks the reader to take a second look at the impact of the Islamic religion on developing Muslim countries such as Indonesia, Malaysia and Turkey.

Laying the blame for lack of economic development on Islam does not explain why Indonesia, in the last 20 years has become an 'industrialized middle-income country' with universal education and long life expectancies. Turkey, with 99% of its population being Muslim, is another example of an Islamic country which has made the transition and is now the 15th largest economy in the world and part of the G20.

Investment in education, while laudable and long seen as one of the tools of any long-term economic development strategy, can have an opposite effect, if, after graduation the newly-enlightened and trained graduate cannot find employment. Such has been the case in Egypt and Tunisia where the percentage of those below 30 years of age¹⁰ are 52% and 61% respectively. In Egypt, 'joblessness among Egyptian college graduates is almost ten times that of people with primary education'. No wonder that college graduates are often leaders in the movements for democracy but to what economic development end? Jobs are only made possible by entrepreneurship and investment either by the state or by private enterprise.

Job growth is directly correlated with innovation. Innovation, as the driver of economic development, takes place when the institutional infrastructure for innovation is in place and, at the same time, individuals and groups (corporate or otherwise) who are the sources of ideas are free to explore and experiment with their ideas. In other words, innovation takes place when several 'enablers' are in place.

An examination of a select number of other Muslim-majority countries reveals a wide range of economic performance¹¹.

⁹ While we report the results of the 12 pillars of competitiveness separately, it is important to keep in mind that they are not independent: they tend to reinforce each other, and a weakness in one area often has a negative impact on other areas. For example, innovation (pillar 12) will be very difficult without a well-educated and trained workforce (pillars 4 and 5) that are adept at absorbing new technologies (pillar 9), and without sufficient financing (pillar 8) for R&D or an efficient goods market that makes it possible to take new innovations to market (pillar 6). While the pillars are aggregated into a single index, measures are reported for the 12 pillars separately because such details provide a sense of the specific areas in which a particular country needs to improve.

¹⁰ Source: U.N. Population Division. The Silatech Index: Voices of Young Arabs, November, 2010.

¹¹ WEF Global Competitiveness Report. 2010-2011.

Country	Population	Percent Muslim	Stage of Development [transition]	Business Sophistication Rank	Financial Market Development
Bahrain	0.7	81.2	Stage 2 to 3	55 th	20 th
Brunei	0.4	67.2	Stage 1 to 2	77 th	55 th
Jordan	6.0	98.2	Stage 2	66 th	54 th
Morocco	32.4	99.0	Stage 1 to 2	78 th	74 th
United Arab Emirates	4.8	76.2	Stage 3	22 nd	33 rd

Islam accounts for 23% of the world's population or 1.57 billion adherents. Fifty countries have Muslim-majority populations.

Any attempt to draw a correlation between Islam and economic development seems suspect. Each country has a very different set of factors which have impacted its development. Any new moves to improve innovativeness need to be developed with the existing culture in mind. One solution does not fit all.

The situation is currently made even more complex because of the recent uprising and calls for change in many of these Middle Eastern countries. Democracy is the clarion call, but the notion of free speech and choice has within it the legacies history, which do not, at this time, result in even a common view of democracy, let alone what might be expected from economic growth.

On the practical side, the one dominant force for change has to be the youth of Middle Eastern countries and their current sad state of unemployment. Governments cannot hope to employ most of youth of the country as has been the practice to date. The best jobs in the nation should not, as they are now seen, to be with the public sector. In Egypt, for example, youth account for ??% of the population, unemployment is at ??, but this does not take into account the vast employment within the enterprises now owned by the military and its extensions. The private sector in Egypt, as it is throughout the Middle East, is weak and needs to find its own. Competition and innovation lead to trade and, are both necessary for job creation. The solutions must come from within each country with support from other nations as can be provided without interference in national policies and programs.

Two central issues need to be addressed:

- innovation as a way to spur economic development, and
- capital formation leading to in-bound investment.

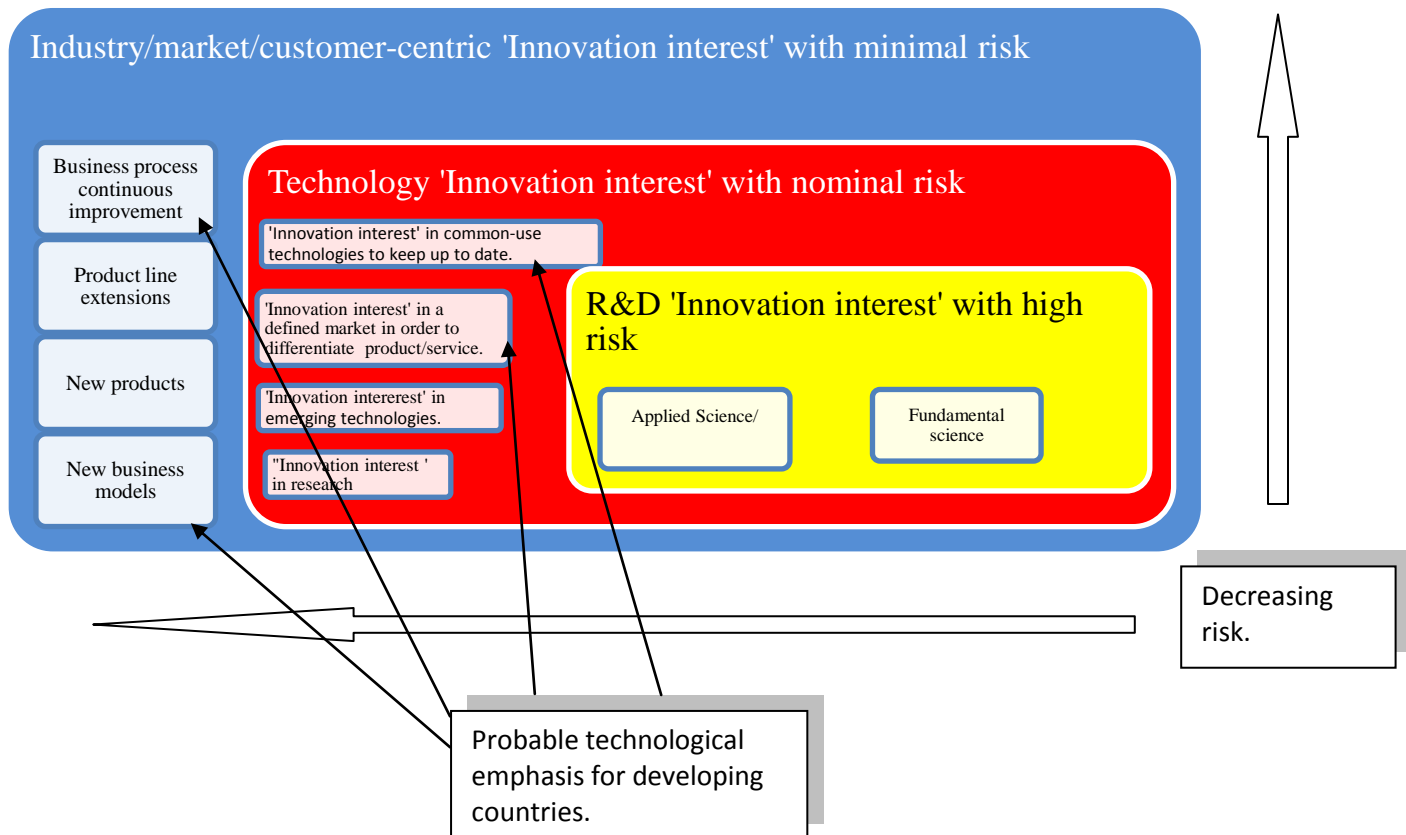
Without a focus on these two issues, there is little chance for employing the youth of these countries.

3. Innovation Defined

Innovation is often hard to define. The word 'innovation' has become common place in the west and has a host of meanings. For the sake of discussion in this paper innovation embraces the exploration or adoption of new ideas from the most 'fundamental research' through to 'continuous improvement'¹², a term credited to the Japanese, and brought into existence in the mid 1960s. Innovation refers to the experimentation and adoption of new ideas of all kinds. Inherent in an idea is the notion of change; grand or small, and the assumption of risk.

The Spectrum of Innovation From Fundamental Research to Continuous Improvement

Developing nations – early Stage - need to focus on job creation and not,
for now, on new sciences of technologies



Developing economies, as suggested by the authors of the Competitiveness Report, are able to develop by focussing on current technologies and knowledge and less so on 'frontier' knowledge such as is represented by fundamental science. Risk and investment levels are dramatically lower. Such a beginning stands a better chance of providing the jobs sought by youth. Latterly, as experience is gained, jobs can migrate to other areas of innovation.

A key element of innovation is the assumption of risk. Risk is higher at the level of research and development than it is in the modification or improvements to business processes. All innovation requires some level of investment (including even emotional investment) and an acceptance that the change may or may not realize commercial gain.

¹² Programmed, and an almost unbroken, flow of improvements realized under a scheme such as Kaizan, lean production, or total quality management (TQM).

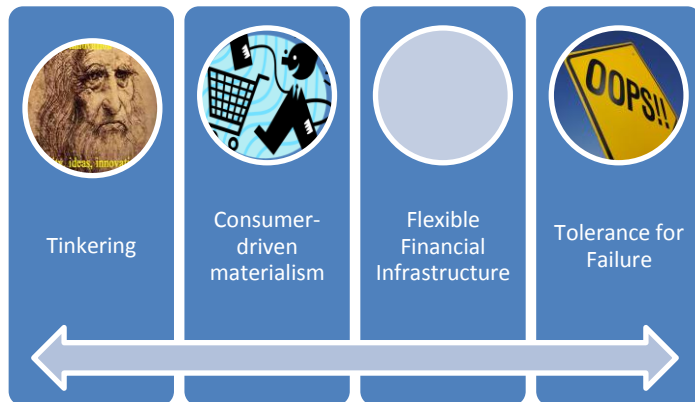
4. Innovation ‘Enablers’

Another way of looking at innovation is to try to identify various drivers – enablers - of innovation. By identifying ‘enablers’ one can examine their presence in Islamic countries.

Tinkering, consumer-driven materialism, a flexible financial infrastructure and an open attitude to failure are four important notions often seen as contributing to a dynamic, innovative economy¹³.

Tinkering puts ideas into action. **Consumer-driven materialism** ensures a ready market for new ideas. A **flexible financial**

infrastructure facilitates the relatively easy establishment and destruction of enterprises. An open attitude to **failure** encourages individuals and corporations to try new ideas, gadgets, and business models. All, or some, of the four notions are found in the most innovative countries.



- **Tinkering** is done by inquisitive minds, mostly having either an amazing intellect or considerable knowledge acquired most often by education. Tinkering can therefore be related to both individual capabilities and to an education infrastructure which provides knowledge to the individual.
- **Consumer-driven materialism**, whether one is an advocate of materialism or not, first requires jobs in place. A society which is, in the first instance, concerned with being fed and being safe spends its money on its ‘needs’ before its ‘wants’. The hierarchy of ‘needs’ must therefore be mainly satisfied before materialism emerges, for better or worse.
- **A flexible financial infrastructure** is directly related to the presence of organizations which have a way of marshalling of resources to turn ideas into a commercial success. Similarly, the existence of an enabler for bankruptcy is equally important, in order to remove those organizations which are not successful and make way for new initiatives.
- **Tolerance for failure** works at the level of individuals, organizations, and in the financial infrastructure. Failure, of course, only occurs when innovation is tried. Most would admit that innovation does not take place without failure. Failure is one measure of the success of innovation. At the institutional level, laws enabling bankruptcy – i.e. failure, allow for a new starts for entrepreneurs.

How many times have you heard the story about one or two guys (most often it is guys) who started their business in a garage and now have a global business? What were those guys doing in the garage other than tinkering - but with a purpose? That’s it. A curious mind coupled with an idea and working, in many cases, with a not-so-sophisticated set of experiments and retries, and ‘voila’ one has the start of a success story. Many fail, for sure, but the ‘tinkering’ story is probably repeated more in America than any other country. Tinkering is part of American folklore. But it takes more than tinkering to create a dynamic economically-successful society. The existence of only one ‘notion’ is probably insufficient for success. Like most success stories, it takes a congruence of ideas, policies, and practices to bring about change. While a number of countries have one or more of these four ‘notions’ in play, the U.S. probably has more of each.

Tinkerers’ success is facilitated by government support. The creation (and monitoring) of financial institutions, the provision of; patent and copyright protection, incubation facilities for entrepreneurs, and support for research institutions, are all examples of cooperation between government and the private sector. Some might view these

¹³ See <http://www.corporateinnovationonline.com>, White Paper for further explanation.

comments as the private sector working within government or, where government works within the private sector. Neither of these extremes is appropriate. In the end success is dependent upon both the public and private sectors working together to foster a climate for innovation.

5. Flexible Financial Infrastructure – The Role of Corporations

One takes for granted the existence of corporations – the organizations which enable innovation and lead to commercialization – little realizing the world has not always had corporations. Trading organizations, consortiums, partnerships have been around for a long time, but not corporations as we know them today.

Earlier in the U.S., corporations had broader responsibilities to stakeholders than is the case today. Corporate law in the U.S. in the mid 1880's¹⁴ was focused on protection of the public interest and not solely on the interests of corporate shareholders. In America corporate charters were closely regulated by the states. Forming a corporation usually required an act of legislature. Investors generally had to be given an equal say in corporate governance, and corporations were required to comply with the purposes expressed in their charters. In the 19th century, firms avoided the corporate model for these reasons and often took on other business forms such as partnerships.

Permissive corporate laws¹⁵ were established by states to compete against the liberal practices of the state of Delaware. In the late 19th century, governments were vying with each other to have more liberal legislation in order to attract investment.

By the end of the 19th century the introduction of limited liability, state and national deregulation, and vastly increased access to capital markets had come together to give birth to the corporation in its modern-day form. Corporations have gained rights.

"So important were these changes that the Economist wrote in 1930 that the economic historian of the future . . . may be inclined to assign to the nameless inventor of the principle of limited liability, as applied to trading corporations, a place of honour with Watt and Stephenson, and other pioneers of the Industrial Revolution.", refuting an earlier opinion in 1855 that stated that such moves were overrated.

By most accounts, businesses are easier to establish and 'demolish' in the U.S, than in most other countries. New start-ups abound in the U.S. facilitated by relatively easy access to venture capital.

Access to venture capital and the capital markets in general is a feature of any innovative country. Many Islamic countries do not have the same financial infrastructure but, as we have seen, the economies of Turkey, Indonesia, Malaysia, even Tunisia, have found ways to grow while at the same time continuing to embrace Islam.

Islamism has little to do with economic development. According to Kuran and Lewis¹⁶, the Koran, far from being opposed to commerce, praised the work of commerce and for those who were trustworthy they would 'sit in the shade of Allah's throne'. The Prophet Mohammed, it is believed, was once a merchant early in his adult life. Cassidy makes the point that the history of colonial occupation throughout the Middle East from the Middle Ages right through to the Ottoman empire saw nations rise and fall but commerce in the form of trade continued.

All indications are that the problems of economic growth have little to do with religion and much more to do with:

- the easy movement of capital, the formation of venture pools,
- the easy formation of business enterprises,
- a trustworthy judiciary to set the rules and adjudicate inevitable disputes,
- ethical business practices especially between producers and customers, and

the provision of a stable government – democratically formed or otherwise.

¹⁴ Wikipedia, Modern Corporations.

¹⁵ *ibid.*

¹⁶ Kuran and Lewis;

While one would also like to add the ‘lack of corruption’ as a contributor to economic development, there is little evidence that its ‘lack’ is a positive contributor to innovation. Corruption, on the other hand, inhibits access to in-bound financing and venture capital and can interfere with productivity. No doubt corruption impacts the efficiency of government and the private sector, but there are numerous examples of countries such as India, and China which have a high level of corruption but are, or are becoming, much more innovative.

6.0 An Example of Innovation at the Individual Level – Putting a Face to Innovation

Perhaps the story of Mo Ibrahim’s success in setting up a highly successful mobile phone network can be used to illustrate how to innovate and create jobs. The following outline, parsed with an emphasis on innovation, is based on an article by Ken Auletta in the New Yorker magazine¹⁷. While the main topic of the article is the operation of The Dictator Index¹⁸, the story of Mo Ibrahim’s life-long journey is intriguing and serves to illustrate how, in the Islamic world, innovation can succeed and how jobs can be created.

Born a Muslim in a 71% Muslim country; Sudan.

Sudan is a country of 37.8 million people, 71.3% of whom are Muslim. The WEF Competitiveness Report does not provide any statistics on the country – one of a few countries not ranked – but the Economist reports a GDP per person of \$2090 and a median age of 20.

Mo Ibrahim is Sudanese-born, now 64 years old and a hero in Africa. He founded Celtel, a mobile phone company which, by 2004, employed 4000 employees 90% of whom are African. Celtel provides service to 6 million customers in 13 countries and has sales of 1 billion.

Education was emphasized by the family.

His parents were Muslim and of modest means but they did believe strongly in education for their 5 children. He was apparently always interested in science and had as his heroes Albert Einstein and Marie Curie. Always at the top of his class, he was offered a scholarship at Alexandria University in electrical engineering. When he graduated in 1968 he went to work for Sudan Telecom. Like many engineers from developing countries, Mo went to study in England in this case at Bradford University in mobile communications. On completing his Masters degree he moved on to earn a Ph. D. from the University of Birmingham in 1981.

Mo Ibrahim had a first class education.

During his time at U of B he spent ‘countless hours in the laboratory, studying what happens when a signal is exchanged between a transmitter and a receiver that are not positioned in a straight line’. He and his group spent a lot of time on addressing the issue of whether radio-wave signals were strong enough to pierce buildings and go around hills.

Tinkering was part of the early experience.

Personal risk was assumed at the outset. He was probably confident of his abilities.

While working with British Telecom, which he came to regard as a highly bureaucratic company and disinterested in the mobile phone business, Ibrahim decides to leave the big employer and a secure job, forms a consultancy practice in London – Mobile Systems International (M.S.I.). A consultancy does not require a lot of capital just talent and perseverance.

Commercial success was in part derived from **proprietary software** derived from M.S.I.’s intellectual capacity.

The growth of M.S.I., which was initially in Europe, North America and Japan, and some work in South Africa, focussed on making transmissions more efficient and was based on M.S.I.’s development of proprietary software known as Planet.

¹⁷ The New Yorker, Annals of Communications, The Dictator Index, Ken Auletta, March 7th, 2011.

¹⁸ Mo Ibrahim created the Ibrahim Index of African Governance – a numerical evaluation of Africa’s 53 governments – a measurement addressing good (or bad) governance.

In the late 1990s- Ibrahim was looking for new challenges and formed Celtel to provide mobile services to African countries. Other continents had land-line services which the big telcos needed to protect. This was not the case in Africa – so the territory was wide open.

Opportunity first perceived and then acted upon.

Traditional **sources of finance** were not available. Aid support was secured probably because of Ibrahim's promotional skills based on his in-depth knowledge of the science and the business side of the mobile phone business.

One of the largest challenges in getting the Celtel venture off the ground was the need to attract capital. Normal banks refused because of the perceived risk. Ibrahim was successful in securing investment assistance from CDC Group, the investment arm of Britain's aid agency and the IFC, the private sector branch of the World Bank and a New York-based investment house, Zephyr Management.

M.S.I. is sold to Marconi in 2000 and Ibrahim concentrates on Celtel. His style has been to focus on strategy after hiring capable

C.E.O.s.

Ibrahim overcomes one of the structural problems of achieving a revenue stream by introducing scratch cards, obviating the necessity of dealing with the banking system.

A new business model is introduced to overcome a structural problem – dealing with banks.

In the end Ibrahim's control of Celtel was trumped by his investors – but for a **big payout**.

Celtel was sold to MTC Kuwait in 2005 for 3.4 billion dollars. Apparently the sale did not satisfy Ibrahim's interest in placing the company on the London Stock Exchange – the first ever private listing to be on the exchange – but he relented in the face of his investors.

The most important lessons learned from Mo Ibrahim's journey of innovation are:

- a solid education – and parental support - is key to provide the educational and motivational grounding for individuals to take advantage of future opportunities
- in this case, education was obtained in a 'distant' land; a common journey for many educated and talented people over the years.
- personal risk is always at stake whether in developed or undeveloped countries. Courage is required.
- tinkering allows for an in-depth understanding of the technology of a product or service. Think time is required to realize bright ideas.
- a deep understanding of the science and the technology of the product or service is the usual source of ideas.
- seeing an opportunity is a fundamental requirement of entrepreneurship. As Alexander Hamilton once said; 'find a need and fill it'.
- investment money is in short supply especially in Africa. Venture capital is lacking. Perhaps there is help through institutions such as the IFC or aid programs, but the help offered is seldom all that it takes.
- new business models may be required to develop a commercial business in countries where people do not have cash nor are they yet plugged into a banking system.
- the length of time for laying the foundation for success is long: 1946 – 1981 [35 years for education], 1981 – late 1990s [15 years to get established], late 1990s – 2005 [relatively short period for success in a 'virgin market'].

It appears that being a Muslim from an Islamic country and doing business in Islamic-oriented countries is far from a barrier. The main barrier is the accessibility of investment capital!

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