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Entrepreneurship: Social Entrepreneurship in the Arab World—Innovation and Entrepreneurship

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What Is Entrepreneurship?

Entrepreneurship is the state of being an entrepreneur, or the activities associated with being an entrepreneur. Entrepreneur, as Joseph Schumpeter outlined in 1911, brings creative destruction through innovation. In other words, entrepreneurship is ultimately about innovation and entrepreneur is an executor of innovation or innovator. A French word, "entrepreneur" was coined by the French economist Jean-Baptiste Say in about 1800 from the word *entreprendre*, which can be translated as "undertaker" or "adventurer." The practice of entrepreneurship is not restricted to small businesses, as some people may think. It is important not only for the new ventures but also for the existing business (big or small) and the public-service institutions which include hospitals, schools, government, community agencies, religious institutions, and professional agencies. Since an entrepreneur is an individual who creates a new

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business or society, bearing most of the risks and enjoying most of the rewards, many entrepreneurs have existed in history. Caravan merchants and traders along the tin road, silk road, tea road, and seafarers during the "Age of Exploration" were all entrepreneurs. In the modern days, famous entrepreneurs are mostly from America, since it was a new country and a land of venture, that include a great inventor and industrialist Thomas Edison, who founded General Electric; John D. Rockefeller of Standard Oil; Andrew Carnegie of Carnegie Steel Company; Henry Ford of Ford Motor Company; Charles Merrill of Merrill Lynch, an investment management company; Charles Schwab of Charles Schwab Corporation, a financial services company; Sam Walton of Walmart, a chain of supermarkets; Thomas Watson of IBM, a computer company; Bill Gates of Microsoft, a software company; Steve Jobs of Apple, a PC and mobile phone technology company; Mark Zuckerberg of Facebook, a social media company; Jeffrey Bezos of Amazon, an e-commerce and technology company; Elon Musk of Tesla, an electronic vehicle company; Jack Ma of Alibaba, an e-commerce and retail company in China; Konosuke Matsushita, who founded Panasonic, an electronics company in Japan; and Byung Chul Lee, who founded Samsung, an electronics and conglomerate in Korea. Social entrepreneurs seek to transform societies at large, rather than transforming their profit margin, as classic entrepreneurs typically seek to do. Muhamad Yanus is a well-known social entrepreneur who established Grameen Bank and started micro-finance in Bangladesh, and also those who conceived and established innovative hospitals and healthcare systems, schools, banks, insurance systems, and cooperatives were all social entrepreneurs. In short, throughout the whole history of human civilization, entrepreneurs emerged who led innovations to change the world towards growth and prosperity.

Innovation and Invention

Although there is no theory on innovation, it is about changes that create values. Innovation is not about the creation of new things but about a new way of doing existing things with the creation of meaningful values. On the other hand, invention is about creating a new thing, such as the

invention of new theory, technology, materials and things both physical or biological. Many inventions, however, are discoveries of the nature, hence there are inventions that are not the creation of a totally new thing. Novel inventions may be entitled to receive the Nobel Prizes but most of them are discoveries of existing things in nature. In this regard, Newton's universal gravitation, Einstein's general relativity, Gregory Mendel's genetics, discovery of new virus (new to human but already existing in nature) and cures, DNAs, are not inventions but discoveries of already existing nature utilizing the inventions of tools such as space telescope or microscope. Invention is a new idea which can be used to make useful things. If anyone makes useful products using invention, that is the innovation since it is a new way of doing existing things. Again, innovation is the creation of any useful things utilizing existing ideas, inventions, or any things including existing innovations. For example, although many people misunderstand that steam engine is a great invention by James Watt in 1769 in Great Britain, in fact, he was not an inventor but an entrepreneur or innovator by improving apparatus from Newcomen's invention of steam engine in 1698. Hence, innovation is the creation or production of valuable things from the existing ideas of invention.

Innovation

After humans, homo sapiens, evolved to exist on earth and started to think or acquired cognitive capability, humankind started innovating—using fires, making tools, agriculture, writing and counting, law of nature or science, mathematics, education, mechanization, transportation, communication, nuclear power, electronics, computers, digitalization, and internet. In short, the humankind today exists through the evolution of innovations which are not natural things but man-made artifacts that are following artificial selections for existence. Innovations for human life span the whole spectrum of the necessities of life such as food, clothing, and shelter, and extend to work, business, society, entertainment, and religion.

Take food for example since it is the key ingredient for human survival; humankind started to plant and grow rice and wheat in about

6000–8000 BC in the southern part of current Turkey and began to cook to make hot food using fire. Ancient people used open fire initially but later innovated stoves to contain fire for the efficient use of fire. Food innovation was crucial for the evolution of humankind since it enabled the evolution of the brain of human to be able to think. With ground wheat or flour, humankind cooked bread, unleavened first but later leavened bread after accidentally discovered yeast and fermentation in about 4000 BC in Egypt. Bread making spread out to the neighboring regions of Central Asia and China. Along the course of spreading the bread making, people began to lengthened it and ended up with noodle. Chinese are dexterous people and could make noodle very thin, which was very special food for humankind, because noodle can be dried, stored, shipped, and cooked easily and safely; hence, it was the first fast food on earth. That means the noodle was very essential for the survival of humankind, and some people speculated that a big portion of the whole population on the earth would have died for hunger but for the innovation of noodle.

Innovations in Business

We live in the "Age of Innovation." Business competition is fierce and the life of business is shortening every year. To survive, companies should become the fittest in the battle grounds. Only thing that companies can do in the battle field to survive is innovation, which will make a company the fittest by artificial selection of market, and be sustainable. Innovation is imperative and a matter of survival for humankind and business.

Today, we are living in an environment surrounded by innovative products. Think about the innovative products you have—smartphone, notebook, TV, car, air conditioner to name a few. Lee Kwan Yew, the founder and former Prime Minister of Singapore, once mentioned that one of the most important success factors of Singapore is air conditioner, because Singapore would have remained as a small fishing village unless there was the innovation of air conditioner.

Although the longevity of a company cannot be guaranteed, there are some innovative companies who won the competition battles, temporarily at least, such as Apple, Amazon, Samsung, Toyota, Foxconn to name

a few. They are successful for now but the future is uncertain and they are striving to innovate ceaselessly for survival. Innovation or perish is the mantra for the companies, current and future.

Categories of Business Innovation

There are different categories of business innovations—product and service, process, business model, and management idea. Product and service innovation includes innovative technology such as semiconductor, secondary battery, GPS, and internet, and innovative products, such as smartphone, digital camera, fintech, and MOOCs (massive open online courses). For process innovation, there are innovative manufacturing processes such as Ford's assembly line, material/manufacturing resource planning (MRP/MRPII), just in time (JIT) of Toyota, and supply chain management (SCM). Another innovation category is business models such as e-commerce and e-business, original equipment manufacturing (OEM), and contract manufacturing. Innovation of management ideas is also important such as GE's industrial research laboratory, DuPont's capital budgeting techniques, matrix organization, balanced score card (BSC), corporate social responsibility (CSR), and so on.

Approaches of Innovation

There are different approaches of innovation. Push innovation and pull innovation are based on the driving force whether it is pushed by technology or pulled by customer needs or demands. Depending on the subject, innovation can be divided by technology innovation vs. management innovation. In a sustainability aspect on the other hand, innovation can either be sustainable innovation or disruptive innovation. A good example of disruptive innovation is the case of mainframe computer vs. PC, where mainframe computer was innovated continuously with additional features to make it better and sustainable, whereas PC was created as a poor featured and low-quality product initially, but along the innovation path of growth, it disrupted stronger mainframe computer. Also, there is incremental innovation vs. radical innovation based on the magnitude of

innovation effects whether innovation occurs in a small scale and incrementally or in a big scale and dramatically. Closed innovation vs. open innovation is another type of innovation approach depending on the boundary of innovation, whether it is closed R&D innovations within a company or open innovations such as crowdsourcing or user innovation.

Among the approaches of innovation, disruptive innovation is particularly important than ever since; fierce competition from the new venture companies and existing competitors disrupt the success of incumbents, and sustaining companies are continuously challenged to preemptively disrupt themselves, in other words, they will face the reality that "disrupt yourself, otherwise someone else will disrupt you."

Examples of Innovation

Product Innovation

There is a sea of innovative products surrounding human life these days—smartphone, smart watch, smart wallet, digital camera, smart TV, autonomous/smart vehicle, PC and computer. Among all the innovative products for the history of human civilization, there are no products other than computer which has impacted the world enormously and dramatically, and thus to create another world, a virtual world.

Computer is the greatest innovation of humankind by any means. Humans started to count long time ago, possibly from 1, 2 and many, then developed 10-digit number system, mimicking 10 fingers in hand, in ancient Egypt. Zero was a great innovation of number which was first conceived by an Indian, Brahmagupta in 628 AD. Early computing started from recording trade numbers on clay tablets in 4000–1200 BC in Babylonia, and then the first physical calculator Abacus was invented coincidentally in Sumeria and China in around 2500 BC. In the middle ages, there was John Napier's Logarithmic Bones in 1570–1580 AD, and Edmund Gunter's Slide Rule in 1620, both for computing numbers. A little after the slide rule, mechanical computing emerged, first with Blaise Pascal's Adder in 1642 and Gottfried Leibniz's Calculator in 1671, and

then there was a more sophisticated concept of "Differential Engine" by Charles Babbage in 1823. Apart from the innovation of mechanical calculators, there was another critical innovation of number system, Boolean Algebra by George Boole in 1854. In his work "The Laws of Thought," Boole invented 0, 1, a two-number system for the algebra of logic which is the basic building block of binary computation of computer. The real innovation of computer came after the innovation of electricity; people electrified the mechanical calculator to make analog computer, which also led to the innovation of digital computer. Early digital computer represented binary number with on-off of vacuum tubes was the first general-purpose electronic digital computer ENIAC in 1964 which used 30 tons of 17,000 vacuum tubes and costed 6 million US dollars. The mechanical switch of on-off was electrified by vacuum tubes but still had the problem of reliable computing free from failures. This problem was solved by electronic on-off switch by solid-state transistor invented by William Shockley, John Bardeen, and Walter Brattain at Bell Laboratories of AT&T in 1947. This solid-state transistor invention led to the innovation of integrated circuits (ICs) which can be made in optoelectronics way by printing design mask on silicone wafer. That means we can make more integrated chips by drawing more dense design mask and just printing it on the silicone wafer. It was the fundamental innovation that led to very large-scale integration, ultra-large-scale integration, and exponential integration that followed the Moor's Law of doubling the number of transistors on a chip every two years, which also enabled the miniaturization of PCs, notebooks, tablets, and smartphones that we use now.

The first programming to operate computer was wired programming which connects computing components with wire. Then, Von Neuman proposed stored-program concept in 1945 with which computer can store not only numbers but also program instructions in the same computer and executes both program and number as it works today. Programming languages, software to control hardware computer, were developed along with the development of hardware. Machine language was the first programming language which directly instructs machine components, thus it was machine-specific and very complex to program. After the machine language, there was assembly language which was independent of machine but still very complex. Then the

third-generation high-level languages emerged such as FORTRAN, COBOL, BASIC, and more advanced languages like C, C++, HTML, Java. Hardware and software complement each other to make a computer workable, applicable, and useful.

Computer communication network is another important innovation of computing. It started from packet switching idea, contrasts with circuit switching, of Leonard Kleinrock in 1964. When he was a doctoral student at MIT and flew on an airplane to other cities, he was hit upon an idea that, like a group of passengers on a plane, a stream of digital data of sentence may be broken down and grouped in a packet and sent from one place (computer) to another (computer) and regrouped to make an original sentence or information. This digital communication innovation revolutionized computer network on either wired or mobile channel, which enabled ubiquitous internet in the end. Internet innovation revolutionized the use of computer, mobile phones, and smart devices using internet of things (IoTs), which further drives home the concept of the 4th Industrial Revolution.

The implications of computer innovation are multi-faceted. First, it is a great fortune for humankind to be able to create, invent, and innovate all the necessary elements of computer—basic logics, devices, hardware, software, applications, and network; people have been able to integrate a wide variety of innovations into one, computer innovation. Second, it is a grand-scale industrial innovation that no other innovation can match. It is enabled by the rhythm of knowledge-based innovations that had a very long gestation period, from Boole's work on logic in 1854 until today, and also at some point in time, there was a sudden surge of convergence of innovations, which made computers a reality.

In some product innovations, complementary innovation is crucial. Take electric vehicle as an example. Electric vehicle is a great innovation and is environment friendly; it is fit for the world of environmental risks. However, there were many failures; companies such as Think, Aperta, Miles, Coda, Fisker, and Better Place, and the electric vehicle business on the whole, was undergoing a very long period of despair. About a decade ago, a rosy future of electric vehicle was predicted but the market did not bloom. There were problems of technology, including battery technology and higher price, but another real problem was charging stations, that is,

without accessible charging stations, customers would not be willing to buy an electric vehicle. Hence, innovation of charging station was needed along with the innovation of electric vehicle. A great innovation alone cannot be guaranteed for success, and this type of complementary innovation is as important as the original product innovation.

Process Innovation

A typical early process innovation was the assembly line production of Ford's Model T in America in 1908. Prior to this process innovation, a car was made by craftsmanship style production where each craftsman worked on assembling a car at one place, fetching the parts needed. It was a "Eureka" moment when Henry Ford visited a slaughterhouse and got an idea of moving a car from the start stage and adding or assembling parts along a line on a conveyor belt just like meats flow along the upper steel bar. This rather simple idea of process innovation cut down the production time of a car from 12.5 hours to 93 minutes, 800% productivity improvement, which enabled Ford to sell a car much cheaper and made Model T a national public car. Ford Motor Company became very successful and the icon of business, of course, but the most important impact of the process innovation of assembly line was that it changed the whole country of America eventually—car owning and driving, the way of shopping and enjoying leisure, and the life and culture of American people.

Another important process innovation of automobile production and many other manufacturing processes as well, is a just in time (JIT) process. When an executive of Toyota Motor Company visited the US supermarket in the early 1970s, and saw how they restocked products on shelves, he got an idea of JIT, supplying parts in time when those are needed just like products are restocked when products are sold out or shelves are empty at the supermarket. It was developed and perfected in the Toyota manufacturing plants to become a rather philosophical Toyota Production System (TPS). It is a pull system of production and eliminates wastes like work-in-process, and later progressed as a lean production and management.

Business Model Innovation

In the year 2000, the year of new millennium, people witnessed the emergence of great revolution on the earth, digital revolution. Use of computer started from computing, so it was called computer, then it was used as logic analyzer, and applications for information and business. After the digital revolution, however, computer and internet replaced many things beginning from commerce, eCommerce and e-business, which brought a new business model innovation. Just before the new millennium, Jeff Bezos envisaged the potential of eCommerce and started a new business model, online book retailing as Amazon.com, because a book is a standardized commodity and orders can be linked directly with the publisher without any inventory on hand. But in fact, he was wrong. To meet the customer demands on time, he needed an inventory of books and there was a problem of matching and packing orders of multiple books. That drove Amazon.com in a grave situation that even Business Week published a cover article, "Can Amazon Make It?" in July 2000, when Amazon never made profits from the start and faced continued cash hemorrhage. Contrary to the zero inventory ideology of the New Economy, Jeff Bezos realized the key mistake and invested huge money on the automated warehouses, which ultimately saved the Amazon. As of 2020, Amazon is the biggest company in the world in terms of market capitalization of more than 1 trillion U.S. dollars, and Jeff Bezos became the richest man in the world as well.

Opportunities and Sources of Innovation

Along with the categories and approaches of innovation, people need to think about the wells or sources of innovation. There are many sources of innovation, such as gaps between existing products and customer wants/needs of either known or unknown, unsolved needs of reality and dream, information gaps, demographic change, environmental change, change in perception, and crisis including natural disaster. Against the common belief, continued success can be an important source of innovation as

well. That is, every business or organization, either for-profit or non-profit, should consider how to innovate incessantly since no one can succeed forever and should be reproduced or renewed. An entrepreneur's important role is to look after and search for the innovation opportunities and try systematic innovation even though innovation may, often time, occur spontaneously on luck.

Gap between assumptions and realities is an important source of innovation. After the "Age of Exploration" in the fifteenth century, maritime transportation was the key transportation mode of commodities because of it being cheaper compared to land or air transportation. Currently maritime transportation accounts for more than 90% of the world's trade. Despite the growing importance of maritime transportation, shipping industry faced a great difficulty in mid-1900s and ocean freighters were dying because of the inherent inefficiency in loading and unloading of freights, and ships were idle for waiting in the ports. People tried to solve this problem by an assumption that developing faster ships would solve the problem but, in reality, it aggravated the situation. To solve the problem once and for all, an entrepreneur came up with an innovative idea of containerization system. Although standardized shipping containers existed separately, Malcom McLean of USA proposed a comprehensive containerization system in 1950s by having standard container box, container ship, container port, container truck which revolutionized the maritime transportation of goods, and contributed greatly to the globalization of trade in the following decades.

Gap of information speed is another source of innovation. We are in the age of affluent data and information. Tremendous amount of data is pouring toward people but humans cannot comprehend and digest the flood of data/information. The solution is an innovation of using AI and Big Data to digest data searching for valuable and meaningful information.

Crisis in Chinese character is the combination of "Danger" and "Opportunity," which means that danger and opportunity come together. If someone faces danger but cannot find opportunity, he or she will fail ultimately. Likewise, if a company faces danger in business but cannot find opportunity and turn around, it will be destined to fail. Many companies face danger and fail because they could not find opportunities for innovation. Kodak, Motorola, and Blockbuster in the USA failed in

sensing the dangers approaching, could not find opportunities to turn around, and failed. In the face of danger, some, not all, companies succeeded in finding opportunity to innovate and turn around for the survival. A famous example is the crisis of IBM. After the long period of success of mainframe computer, IBM faced unprecedented crisis in the early 1990s since they could not sense the drowning of mainframe computer business and missed chances to innovate to prepare. They hired Lou Gerstner from outside and innovated management, and most importantly, innovated business model from hardware business to software business and IT services, which saved the nearly dead IBM. Another example is LG Electronics, which is a mobile devices and appliances company in Korea. LGE faced crisis of declining appliance market and labor disputes in late 1980s, and the top management decided to shut down and sell the home appliances (HA) unit of the company. After a long deliberation, however, they agreed with labor union and decided to try again, and started a crisis-initiated innovation called "tear down & redesign (TDR)." TDR aims to solve any one specific problem which intended to lead to new innovations with a clear goal in a fixed time duration of 6–12 months. TDR was the spring of innovations such as direct drive invert method, steam, 6-motion of drum washing machine, TROMM, which became the global top selling appliance and saved the home appliance unit of LG. In many cases, crisis has been one of the most important sources of innovation because crisis can be an opportunity.

Demographic change is critical in economy and brings a variety of markets and products—juvenile market, house market and related product market for the newly-weds, senior market, labor market—which can be an important source of innovation. One of the greatest burdens of today's society is "Aging." Fewer young generations need to support more senior generations. "How to innovate to solve this issue" is the key question for many countries, which is not only a business issue but also the social issue of innovation.

New knowledge—scientific, technological, and social—drives innovation as well. Telephone exchange, as an example, was carried out by manual service exchange for a long period of time. The number of telephone operators was exponentially increasing as telephone subscribers increased that caused headache inefficiency. New technology of electro-mechanical

exchange and later electronic exchange were developed and solved the problem of manual exchange. Scientific discoveries and technological invention of electricity and computer, specifically, can lead to the innovation of the whole industries and society as we witnessed in the last several decades.

Social Innovations

Microfinancing of Bangladesh is a great social innovation of financing the poor. Another social innovation, Aravind Eye Hospitals, is revolutionizing the concept of efficient and sustainable eye care in India and across the developing world, which provide affordable, high-quality care for millions of individuals and also serve as a model example of sustainable health care business. Innovation of education is another important social innovation. Education has been evolved from the ancient times but formal education started from Christian monastic schools and Catholic schools in Europe in the Middle Ages. University was an educational innovation which played important roles in the development and prosperity of society. The oldest existing university in the world is the University of Karueein, founded in 859 AD in Fez, Morroco, and the first European university is the University of Bologna founded in 1088 in Italy. An important innovation of university was the Humboldtian model of German university, Humboldt University of Berlin established in 1820 based on the idea of research, thus a research university which impacted then new American universities. University education remained stagnated without major changes for a long period of time until it met with computer. MOOCs (Massive Open Online Courses) is another important social innovation which provides open, online, and free courses globally. The wide variety of changes in social systems are social innovations as well such as changes in health-care system, life-long training and education, social welfare system, future transportation system, food and drug administration system, public security and defense system, free trade system, climate accord, and economic communities like EU and African AEC.

Systematic Innovation

Entrepreneurs should search and analyze the sources of innovation using both the right and left brains, or conceptual and perceptual perspectives. Efforts of innovation need to start small and aim at the leadership of business such as Apple's platform strategy, which set the direction of future technology and industry. Talent, ingenuity, and knowledge can be the necessity of innovation but for sufficiency, you need hard, focused, and purposeful work for innovation.

For systematic innovation, every company needs to have an innovation strategy to do the following: (1) Search for opportunities and sources of innovation and try to find "Eureka" or "Aha" moment, (2) Synthesize the diverse ideas, (3) Select target projects with when and how, (4) Employ holistic approach to build innovation ecosystem, (5) Trade-off conflicting priorities, (6) Test in the consumer market and make final decision on the innovation. The final proof of innovation is always the "Market." Innovation efforts should be systematic, and continuous and intermittent; no company ever forgets to disrupt itself or self-disruption for eventual survival. Innovation culture is important as well to foster the mindset of never being fully satisfied with "status-quo," which is imperative for the survival and continued success.

Why Does Entrepreneurship Matter?

Everything changes; business changes, demography changes, people's perception changes, environment changes, political system changes, and society changes. The only eternal thing is the change. Changes are imperative and Darwin's evolutionary theory tells us that only those who can adapt to become the fittest can survive and thrive in nature by mutation, reproduction, and natural selection. Man-made artifacts, however, do not follow the natural selection evolutionary process apart from the natural beings. After human beings appeared on earth around 200,000 years ago, humans started making artifacts such as tools, agriculture, cities, and civilizations. The whole spectrum of artifacts is enormous, almost all

things that are human made, and some artifacts survived not by natural selection but by artificial selection by market. We know the stories of success and failure of businesses, economies, and countries. For the survival of all the artifacts, there is no question that we need to understand and manage the changes.

Entrepreneurs take risks, and as Peter Drucker wrote, they see changes as the norm and as healthy, and always search for change, respond to it, and exploit it as an opportunity by systematic entrepreneurship. In other words, entrepreneurs innovate. Innovation is the specific instrument of entrepreneurship. Hence, for the business, society, and individuals, entrepreneurship and innovation matter for their survival and prosperity. With entrepreneurship, America succeeded. Entrepreneurship can expedite, like dynamite, the prosperity of the economy and country as a whole.

One remaining question may be, then, "Is entrepreneurship teachable or learnable?" Entrepreneurship is more of a personal character and is difficult to teach. However, it can be trained by the practice of business education, such as case study, role play, what-if simulation, project-based learning, and action learning. The practice of innovation and entrepreneurship is imperative, and should be learned systematically.

Why Entrepreneurship in the Arab World?

Arabs had been the birthplace, in the world, of agriculture, character, mathematics (algorithm), trade (early commerce), civilization, and entrepreneurship (camel-led caravan merchants) in ancient years. Since the middle ages, however, it lagged behind for long period of time in the development of economy and national wealth until oils were found in some part of the region. To be sure, natural resources are limited and can become a critical weakness, which often turns out to be a curse. Recognizing this limitation, the oil rich countries, let alone the oil-poor countries, are trying to change—a change from agrarian economy to industrial or knowledge economy—but most of them, if not all, are facing challenges. The biggest challenge is how to find something that can adapt itself (a country or business) to be the fittest for this fast-changing world and differentiate it from others—something different from the

Dubai's Future Mega Projects or NEOM Project in Saudi Arabia. Politics may matter the most but basically that's the question of entrepreneurship and the question of how to nurture entrepreneurs in this region. Eventually, entrepreneurship is important not only for the survival but also for the continued success and prosperity of business and country.